Vol. 3 No. 3 Summer 2007

i.e. interactive educator

Future Proofing Students

Preparing students to succeed in the global workforce

Making Strides in Miramichi

Point of View

Technology's role in teaching foreign languages

Guest Column

Will Richardson explains why schools should promote online networking

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LETTER FROM THE EDITOR

If you were to walk the hallways of SMART's head office on any given day, the snippets of conversations you'd catch would be very similar to what you hear in the hallways of most schools. People here are focused on finding ways to help prepare students for the global workforce and to instill the 21st-century skills they will need to be successful when they leave school.

That's why this issue of *i.e.* magazine focuses on how technology can help future proof both your schools and your students.

For our cover story, Ellen Ullman spoke with leading educators and experts who shared their findings on what exactly 21st-century skills are, why they're important and how schools can teach them to their students (**Future Proofing Students p. 22**).

If you're looking to garner some tips from education leaders on planning for and implementing technology purchases, we have two great articles for you. First, Diane Curtis covers how a superintendent's vision coupled with interactive whiteboards led to a sensational success story for School District 16 in Miramichi, New Brunswick, Canada (**Making Strides in Miramichi p. 28**). Then, we spoke to Rebecca Perry, superintendent of Alexandria City Public Schools, who shared her strategies on preparing for future technology initiatives (**Gazing into the Crystal Ball p. 34**).

Also in this issue, two leading read/write Web experts weigh in on the benefits of new Web trends in education. First, our guest columnist Will Richardson discusses the advantages of using the Web's latest networking capabilities in the classroom (**Networks of Learning p. 20**), then Wesley Fryer highlights administrators who blog and the benefits they are reaping from the ability to communicate with teachers, colleagues, students and parents (**Top-Level Bloggers p. 40**).

With NECC 2007 just around the corner, we also wanted to give you a sneak peak at some of the great new services, resources and programs SMART will be announcing during the show. You'll find the guide in the center of the magazine. Be sure to check out SMART's special NECC website often for more details at www.necc.smarttech.com.

As always, we hope you find this issue helpful in your efforts to help develop tomorrow's leaders. If you'd like to submit your opinions and ideas about the magazine, we'd love to hear from you. So send your comments to ieeditor@smarttech.com.

Sincerely,
Wendy McMahon
Managing Editor

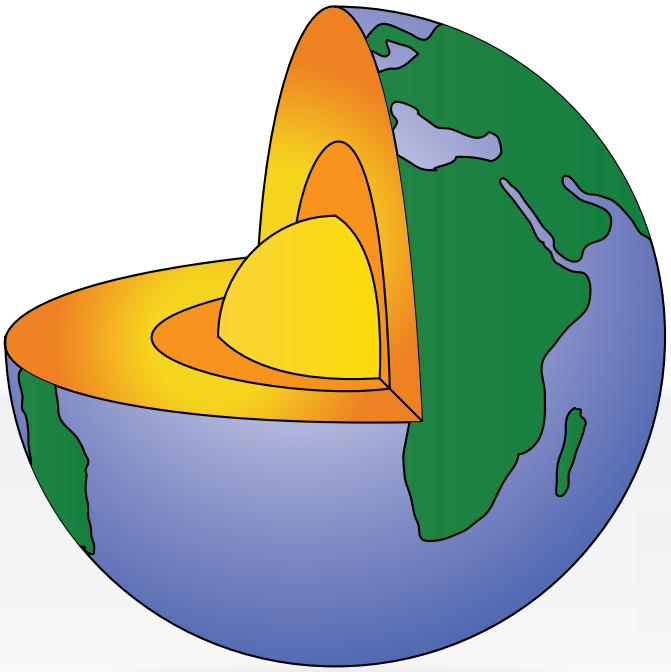
CONTRIBUTING WRITERS

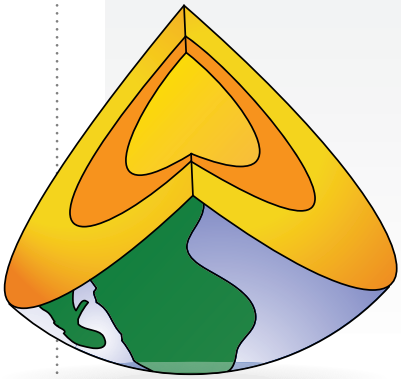
Diane Curtis is a veteran journalist and education writer based in Mill Valley, California. She has written for The George Lucas Educational Foundation, focusing on technology in schools, and has worked for the *San Francisco Chronicle*, the *Sacramento Bee*, the *San Jose Mercury*, the Associated Press and United Press International, where she was a White House correspondent. She has won numerous awards, including Best in the West for editorial writing.

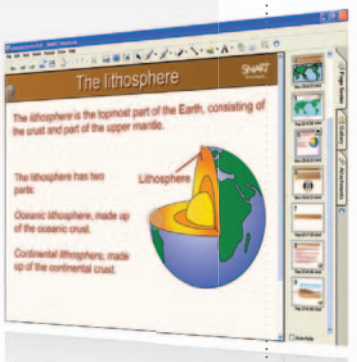
Ellen Ullman started writing about technology in the early 1990s while she worked at The Boston Computer Society. She was a technology editor at several magazines, including *Small Business Computing, FamilyPC* and *Working Woman*. Her work in the area of education technology began five years ago when she worked as an editor for *Scholastic Administr@tor* and *District Administration*. She currently serves as the senior editor for *Cable in the Classroom* and *Threshold Magazines*.

Will Richardson is known internationally for his efforts in helping educators and students understand and implement the tools of the read/write Web. He is a founding partner of the Connective Learning Group, which is dedicated to helping educators contextualize and implement read/write Web tools into their schools and classrooms. In addition, he is a national advisory board member for the George Lucas Education Foundation, and he writes a monthly column on the uses of Web 2.0 tools in schools for *District Administration* magazine.

Charlene O'Hanlon is an award-winning editor and writer, specializing in technology tools and trends. Over the last 15 years, her articles have appeared in numerous technology and telecommunications trade publications, including *PHONE+, CRN* and *Campus Technology News*. A native of Arizona, she graduated from the University of Arizona with a bachelor's degree in journalism and now makes her home in New York.







What is better than the real world?

The one you can take apart and put back together. Sometimes, virtual is better.
How else can your students build an atom? Meet Tutankhamen? Look inside the earth?

SMART's interactive lesson activities run from five to fifteen minutes and are correlated to curriculum standards for all core subjects. Play with them, edit them, adapt them to the needs of your class.

Go ahead. Let them take apart the world. Visit **www.education.smarttech.com** and see SMART lesson activities in action. Our collection grows every month.

www.eduction.smarttech.com

SMART Technologies

Lesson activities from SMART

– SMART Technologies Inc. continues to grow its extensive bank of SMART lesson activities. Teachers can now find lesson activities to help them teach up to a quarter of their secondary-level language arts, math, science and social studies units. Teachers can play with these lesson activities, edit them and adapt them to the needs of the class.

SMART's interactive lesson activities run from 5 to 15 minutes and are correlated to curriculum standards for all core subjects. These lesson activities have a consistent color-coded design specific to subject area and grade level. They also include features such as teachers' notes, graphics and Adobe Flash files created by SMART's team of content developers.

SMART Technologies Inc.
www.education.smarttech.com

World Teachers' Day video contest

– SMART is now accepting entries for its second annual World Teachers' Day (WTD) video contest.

Teachers around the world are invited to submit videos that demonstrate how SMART Board interactive whiteboards are improving student learning outcomes. Seventy-five winners, selected from five global regions, will win iPod shuffles. The top regional winners will each receive a SMART Board interactive whiteboard, and the overall winner will receive the grand prize of an all-inclusive trip to London, England, for BETT 2008, a leading education technology tradeshow.

The goal of SMART's World Teachers' Day Video Contest is to showcase teachers' efforts to improve student learning outcomes and engagement.

The contest is open to K–12 teachers worldwide, in both public and private schools. SMART's World Teachers' Day Video Contest 2007 closes on June 21, 2007. Winners will be announced on WTD, October 5. Prizes will be distributed to winners from Europe, Asia Pacific, Latin America, Africa and the Middle East, and North America.

Full contest rules and details are available on the contest website.

World Teachers' Day video contest
www.smarttech.com/wtd

SMART launches Showcase School program

– Are you an administrator who is interested in seeing how SMART products are improving student learning outcomes and helping teachers streamline lesson planning? Would you like to speak with educators, administrators and technology coordinators about how SMART products are transforming classrooms in your community? If so, you'll want to check out the SMART Showcase School program.

At Showcase Schools, administrators and teachers recognize the benefits of using interactive whiteboards to impact student learning and enthusiastically share the results with the education community. The schools act as references and hosts to other schools or district stakeholders interested in discovering how SMART products can be used to improve teaching and learning.

To find a SMART Showcase School in your area, please visit SMART's education solutions website.

SMART Showcase School program
www.education.smarttech.com/showcase

Connect with schools using SMART products.

If you would like to see firsthand how SMART products are transforming classrooms in your community, take advantage of the SMART Showcase School program.

In each issue of *i.e.* magazine, we'll highlight the latest schools and districts to join the community of educators who are willing to host visitors wanting to see how SMART products are improving teaching and learning.

To find out how you can contact these schools and many others, visit www.education.smarttech.com/showcase

SMART's newest Showcase Schools

The Donna Klein Jewish Academy
Boca Raton, Florida, United States

Gladden Middle School
Chatsworth, Georgia, United States

Lewisburg Elementary School
Olive Branch, Mississippi, United States

The LINK Community School
Newark, New Jersey, United States

The MacKay Centre School
Montreal, Quebec, Canada

Norwood Elementary School
El Monte, California, United States

Springfield Middle school
Fort Mill, South Carolina, United States

Taft Middle School
San Diego, California, United States

SMART Showcase District

School District 16
Miramichi, New Brunswick, Canada

Wired buses help rural learners – School buses are being equipped with wireless Internet access as part of a project that could have enormous implications for rural students. Proponents of the project say wireless connectivity on buses could turn what is often a dull ride into an opportunity for learning.

Billy Hudson, who is a professor of medicine and biochemistry at Vanderbilt University in Nashville, Tennessee, is turning rural students' buses into mobile classrooms. Using "Internet-in-Motion" technology, the bus is equipped with wireless high-speed Internet. This allows students to download online lessons via cell-phone towers.

Husdon's childhood in rural Arkansas was the inspiration for the project.

Children in his hometown of Grapevine, Arkansas, are so isolated that, for some, the bus ride between their homes and school lasts 90 minutes each way. But Hudson plans to use those long hours to the students' advantage by using technology to give them science and math instruction while they ride. Recently, he returned to his hometown to launch the three-year pilot project called the Aspirnaut Initiative.

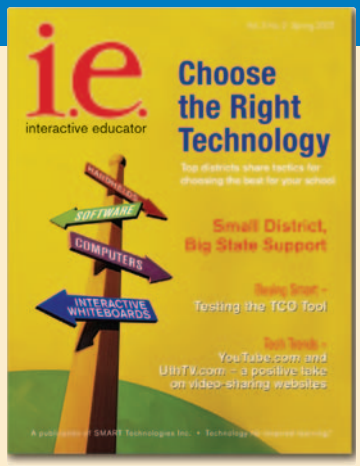
Students who chose to participate in his project received video iPod MP3 players to view educational videos and podcasts. A select group of 15 students received laptop computers that will allow them to communicate with other Vanderbilt professors who have designed individualized lessons for them.

Hudson explains that using video-conference technology, the professors can conduct scientific experiments in Nashville while talking with the children live. "Two Nobel laureates have endorsed this program, and they both said we need to get children engaged in the real world of science," he says.

Fewer than one-third of American fourth- and eighth-grade students performed at or above proficiency in mathematics, according to a November 2005 report from the National Academies of Science and Engineering. With this in mind the purpose of this program is not only to improve rural education, but also to counter the decreasing number of scientists, mathematicians and engineers the country produces by elevating mathematics and science achievement of underserved rural students.

Aspirnaut Initiative.
www.aspirnaut.org

Letters to the Editor



Critical resource

I am the director of the education technology center for the College of Education at Wayne State University. Your magazine is one resource that I think is critical for our student teachers as they explore technology in the classroom.

Mary L. Waker, Ed.D.
College of Education
Wayne State University
Detroit, Michigan, United States

More copies please!

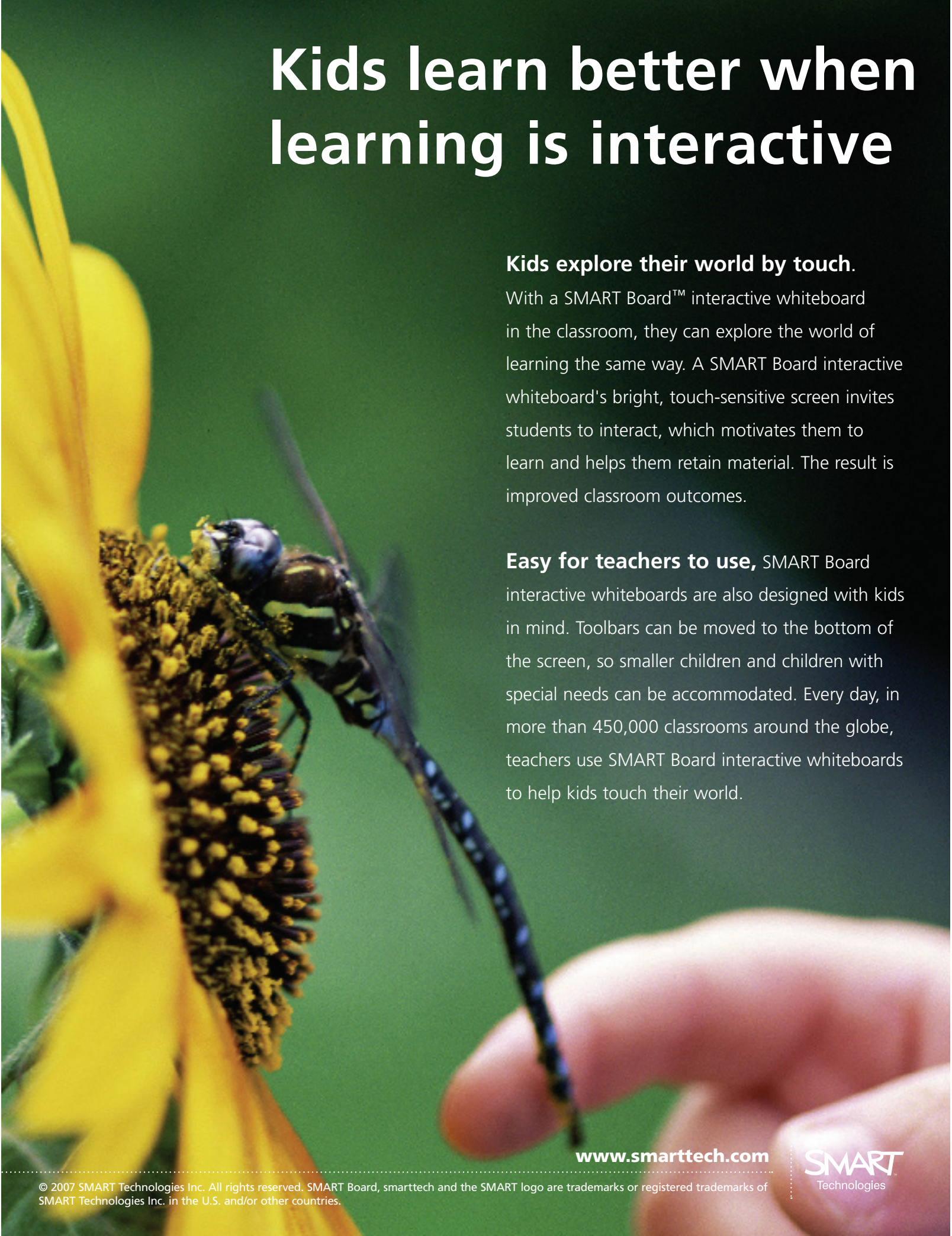
Great article! I just finished reading the article about our school, entitled "Data Driven Development" on pgs. 14–15 (spring 2007 edition). Please send us at least two additional copies of the spring issue.

Janet Blanchette
Alton C. Crews Middle School
Lawrenceville, Georgia,
United States

Keep up the good work

Thank you for the opportunity to respond to *i.e.* magazine. Thank you, in fact, for creating it! I was happily surprised when I started receiving it this [past] summer. Keep up the fantastic work. You really respond well to the needs of education!

Jeanne Pascon
West Hartford Public Schools
West Hartford, Connecticut,
United States



Kids learn better when learning is interactive

Kids explore their world by touch. With a SMART Board™ interactive whiteboard in the classroom, they can explore the world of learning the same way. A SMART Board interactive whiteboard's bright, touch-sensitive screen invites students to interact, which motivates them to learn and helps them retain material. The result is improved classroom outcomes.

Easy for teachers to use, SMART Board interactive whiteboards are also designed with kids in mind. Toolbars can be moved to the bottom of the screen, so smaller children and children with special needs can be accommodated. Every day, in more than 450,000 classrooms around the globe, teachers use SMART Board interactive whiteboards to help kids touch their world.

www.smarttech.com

SMART Technologies

by Jane Chamberlin Grove

New ICT Benefits

Research says ICT improves learning and teacher quality of life

It's not surprising that a three-year study on the effectiveness of technology in education should take place at the University of Virginia's Center for Technology and Teacher Education (CTTE). Dr. Joe Garofalo and his colleagues at the Center place great importance on content, pedagogy and technology as they prepare new teachers for their imminent career. But the focus isn't just on preparing student teachers to use technology and software. Garofalo tries to find the best ways to incorporate ICT into teaching with the goal of furthering understanding. The CTTE faculty is deeply concerned with improving secondary students' comprehension of mathematics and science through the use of ICT, so they are striving to help student teachers discover creative and effective ways to use technology in their own teaching.

The CTTE research project focuses on how technology makes a difference in students' understanding and how student teachers use digital tools. The study, though still in progress, is already showing that the SMART Board interactive whiteboard plays a key role in lesson planning and visual learning. Funded in part by a grant from the U.S. Department of Education's Fund for the Improvement of Postsecondary Education, the CTTE research involves equipping secondary mathematics and science student teachers with interactive technology that includes a laptop, projector and SMART Board interactive whiteboard, along with content-specific mathematics and science software.

As student teachers learn to use the technology in their pedagogy classes, Garofalo and his colleagues emphasize the value of multiple representations and visualization in teaching math and science concepts. The SMART Board interactive whiteboard is so deeply embedded in the professors' teaching methodology that student teachers always finish their classes with a strong sense of how best to use ICT tools. Once students are comfortable using the interactive technology in their subject-specific pedagogy classes, they can then implement it in the classroom.

In our 2006 spring issue, we introduced you to a research project at the University of Virginia. Now, we bring you the latest results from the project.

A goal of the project was to compare the students' learning in mathematics and science classes taught with technology with that of students taught without technology. The first step was establishing a control group in which a section of pre-calculus mathematics would be taught using a blackboard and graphing calculator. The other section would be taught using an interactive whiteboard.

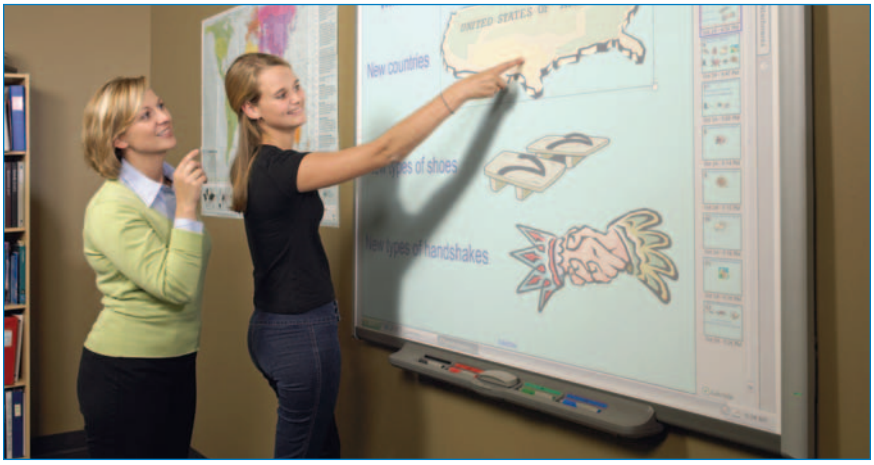
Garofalo asked several of his student teachers to teach both a treatment section and a control section, and it was here that the project took an unexpected turn. None of the student teachers wanted to give up using the technology. "They were convinced that the technology was going to have a positive impact on the students," explains Garofalo, "so they felt it was not right to withhold it from some of their sections." In the end, Garofalo asked a teacher with 14 years' experience to teach a control group. One of the CTTE student teachers took on a comparable section using interactive technology and software such as The Geometer's Sketchpad, Excel and PowerPoint software, and TI-SmartView.

The results of this controlled study showed that the technology-enabled section produced a better understanding of trigonometry concepts, despite the disparity in teaching experience between the two groups. "In overall performance, the visualization group did much better," says Garofalo. "The technology group outperformed the non-tech group on a number of important items." More important than the numeric data, according to Garofalo, is a theme surfacing in the students' problem-solving procedures. "You could see that their thinking was a little bit different because of the visualization."

When the CTTE team interviewed the young students about their math unit, it became even more apparent that visual explanations were integral to enhanced understanding. "There were numerous occasions where the kids referred to things like seeing a radian being swept out in this radian flash applet we developed," explains Garofalo. Seeing concepts displayed and manipulated on the SMART Board interactive whiteboard made a significant difference to how students processed information. Even students in the technology-enhanced class recognized their advantage. Garofalo says that he "heard two of the kids saying 'I don't know how they did this in the other section.' They saw the value of having that visualization."

In addition to evaluating the effectiveness of technology on students' comprehension levels, Garofalo's research also examines how student teachers implement technology. One of the main findings, deriving from two cohorts of student teachers, concerns the use of technology for mathematical representation. During interviews with the research team, student teachers often commented that the technology helped support higher conceptual learning and student engagement. They also referred to visual representation as a highly positive factor in their lessons.

The student teachers' comments led Garofalo to a surprising discovery – they indicated that the SMART Board interactive whiteboard and its accompanying software had a significant impact on their quality of life. The technology gave student teachers the ability to plan lessons thoroughly and incorporate other software applications seamlessly, thereby reducing the novice teachers' stress levels in class. They didn't need to worry about inadvertently straying from lesson plans because they could use Notebook collaborative learning software as a storyboarding tool. Charts, website links, graphing grids, statements of theorems from the electronic versions of their textbooks – these could all be pulled together and laid out page by page in one Notebook file. Thumbnails of each page, visible on the interactive whiteboard, made it easy to maintain the flow of the lesson and provided the flexibility to flip back and forth to accommodate the changing needs of a class.



"The technology group outperformed the non-tech group on a number of important items."

Clearly the technology was saving time and reducing stress during class, but Garofalo wondered if the hours spent preparing these elaborately structured lesson plans actually paid off. A resounding "yes" came from the student teachers. They didn't mind putting in the extra preparation time because they knew it would make life easier in class. Plus, the Notebook software lessons gave them more class time for having discussions and asking their students higher level questions.

These teacher-oriented benefits created great enthusiasm for Garofalo's program officer in the U.S. Department of Education. When the program officer for the grant visited some of the participating schools, she was deeply impressed by the technology's contribution to the teachers' quality of life. "She thought anything that could make the teachers' lives easier was a huge finding and encouraged us to focus on that," explains Garofalo.

The CTTE's research project is an ambitious and ongoing study and will likely continue to produce intriguing results for some time. In the meantime, Garofalo and his colleagues will encourage student teachers to see classroom technology as a resource that will help them deliver their lessons more effectively and further their students' understanding. Teachers graduating from the University of Virginia will enter the world of education knowing the importance of excellent digital resources and how to incorporate them into lessons in ways that capture attention and promote learning.

Jane Chamberlin Grove is an experienced Alberta-based writer and editor whose interests range from education and technology to the arts and translation.

by Kim Vanderleer

Focus on the value

Analyze the value of your investments with new VOI tool

Ensure you reach your financial and educational goals with the new value of investment tool from CoSN.

Bottom line – everyone's definition of the term is different. In a business environment, it refers to the costs and profits of an investment. But what does it mean for your school district? What is your bottom line when it comes to education technology integration?

As an administrator, you hear every day about the bottom line for education – from government officials who want schools to set high standards for student achievement, from parents who want their children to get into college and from teachers who want to make the most of class time. Technology may help you respond to these needs, but you have to choose it wisely.

To do this, you'll need tools to help you evaluate your proposed technology investment. Maybe you already use an analysis tool like return on investment (ROI) or total cost of ownership (TCO) to measure the financial success of your integration projects. But do these tools account for your goals and mandates; do they help you meet your bottom line? Do these tools help you assess the education benefits of the technology project? In other words, can you tell if the technology is impacting student performance or helping teachers create better lessons?

The Consortium for School Networking (CoSN), a pre-eminent voice in education technology, says they have a guide to help administrators, like you, through the process of deciding which technology will meet the needs of your district. In 2006, they launched the value of investment (VOI) tool, an assessment tool to help you determine if a proposed technology project can meet both your financial and education goals.

But with other methodologies readily available, why should you choose to use VOI? Rich Kaestner, CoSN's VOI and TCO project director explains how VOI works and how it differs from TCO and ROI.

Why VOI?

Kaestner says it's easy for an integration project to wander off course if school districts don't use an assessment tool that considers education benefits as well as financial benefits. Conducting benefit analysis will help you communicate your ideas to stakeholders and address any problems with the integration before you install the technology. Kaestner believes a tool like VOI can help you do this. He says that because ROI doesn't help measure the education benefits of a project and only accounts for the financial side of the technology's

evaluation, it is not a suitable assessment tool for schools.

"ROI is used by businesses and looks at the financial return. Schools are not in the business to make money – and investments to enhance teaching and learning, for example, are not pursued to make or save money. VOI is a sort of ROI approach using what is important to schools as measures of benefits," explains Kaestner.

What is VOI?

Kaestner says that the VOI tool was created because administrators are under pressure to integrate technology into their districts but may not know where to begin or how to measure the success of the project. Launched less than a year ago, VOI is a free online assessment tool that takes the guesswork out of determining the value of your future investments.

"The CoSN VOI project is really the next step from TCO. TCO helps districts and schools to understand their current technology-related costs for networked computer environments. VOI takes the next step in helping to determine anticipated costs and benefits of proposed technology projects," Kaestner says.

How does VOI work?

If you are thinking about using this methodology, Kaestner recommends you determine what your school district needs are. Take inventory of your installed technology, and evaluate and budget for all the initial and continual costs, including training, retrofitting and technical support. Kaestner says it's important to understand your current technology environment before proceeding with new projects.

When you're ready to buy education technology, you'll want to consider the financial implications, but to actually meet your bottom line, you'll need to figure out exactly what your education goals are. CoSN has provided a worksheet on their website that can help you state what your goals are and explain them in measurable terms. For instance, rather than having goals like "promote postsecondary education," the CoSN worksheet can help you communicate that goal in a way that is quantifiable – "increase college entry rate from 62% to 68%."

Once you articulate your goals in this way, the worksheet asks you to rate the potential effect the proposed technology might have on those goals, as well as any potential cost savings that could arise from achieving the goal.

Your bottom line may or may not include cost savings, but financial benefits can emerge from accomplishing your education goals. For example, if your goal is to reduce absenteeism, and the technology you install helps you do this, then the time, resources and labor costs that would otherwise be spent on truants will now be reduced.

Many tools can help you analyze your technology investments, but if you are interested in determining the education benefits of planned technology projects, VOI may be the right measurement tool for your district. The CoSN website has explanations and worksheets to help you through the VOI evaluation process.

Kim Vanderleer is an Alberta-based writer who focuses her love of research and writing on exploring issues in education and real estate.

CoSN outlines five steps to follow when conducting VOI analysis:

1. Estimate project costs – Evaluate and budget for the initial and ongoing costs of the proposed technology project using the TCO methodology. This includes the costs of purchasing, implementing and maintaining ICT products. The costs of direct and indirect labor, and user time are also important considerations.

2. Calculate anticipated savings and revenues – Identify any cost efficiencies or savings that may arise from the technology project. This can include lower out-of-pocket costs, grants and federal aid.

3. Measure qualitative benefits – Indicate how the proposed technology project helps improve student learning outcomes. The benefits must directly or indirectly affect the mission, goals and mandates of the school or district to qualify as a benefit of the project.

4. Assess risk – Analyze which (if any) project is worth implementing. Compare competing proposed technology projects to determine which one meets the school or district's education objectives.

5. Evaluate results – Review your actual costs and benefits against your proposed costs and benefits to analyze the results of your integration project. The evaluation will provide detailed information on the decision-making process and whether the technology has achieved its projected goals.

For more information, visit www.edtechvoi.org.

by Cara Erenben

Best Practices for PD

Research reveals best strategies for training programs

Wondering what makes a good professional development (PD) program and, specifically, what constitutes good PD when it comes to integrating technology?

Assistant research professor at the University of Connecticut Julie Coiro carried out a literature review to answer these exact questions. She then combined her findings with what she had learned from her experience training teachers in elementary schools throughout Connecticut. Her research was published in 2005 as a chapter in the book *Innovative Approaches to Literacy Education: Using the Internet to Support New Literacies.*

Sarah Meltzer, visiting assistant professor at Western Carolina University, conducted her own research in this area. Meltzer examined recommendations from professional organizations, best-practice documents, and models completed by schools, and she surveyed teachers for her dissertation "An analysis of professional development in technology for elementary school teachers." Meltzer's dissertation was completed at Florida Atlantic University in 2006.

Here, they both share their findings on how to create and implement effective PD programs, with a focus on technology training.

Get teachers involved

Asking teachers to help set the agenda is one of the top strategies for creating a successful technology professional development program, according to Coiro and Meltzer.

"It's a case of getting teachers to buy in," says Coiro. When teachers are asked for their input and give their opinion, it instantly requires some commitment on their part, she explains.

Planning with the teachers and administrators involved creates a "shared vision," says Meltzer. Professional development is more effective when teachers know why they are doing it and know how the training supports the school or district's goals.

Both researchers found the top-down approach, where school leaders mandate the same training across the board, is least successful.

Teachers are used to being told what training to take, and oftentimes it doesn't relate to their daily work or the technology tools they have access to. "This approach doesn't work and there's research to support this," explains Coiro.

Garner administrator support

Mandates for professional development that aren't properly supported with money, time in the schedule and commitment by school administrators are also unacceptable, explains Coiro. "Does the administrator come to the session? That's huge," she says. When a school leader introduces the presenter, gets everyone excited and then goes back to his or her office, it sends a message.

According to the research reviewed, professional development outcomes are better when school administrators are present, listening to teachers, permitting time in their schedules for training and ensuring enough money is available to execute the program.

Use the right format

Coiro and Meltzer also discovered that researchers find a correlation between the style of PD and its effectiveness. Professional development that is ongoing, job-embedded, hands-on and group oriented is more effective than one-time, lecture-style presentations.

"Fewer than 10 percent of teachers implement new ideas learned in traditional professional development workshops," says Coiro. Research shows that outcomes are "significantly higher" when a job-embedded approach is used.

Job-embedded professional development means teachers are actively engaged in their training for a few hours each month. Often, teachers meet with their peers outside training sessions to discuss what they have learned and what they have tried in the classroom.

three to five years to move through the phases of acceptance," explains Coiro.

Meltzer agrees. "In technology, you are really changing the pedagogy," she says. "It really takes three to five years to change pedagogy."

In Connecticut, Coiro has been working with the same groups of teachers for four years in a row to measure the growth of the teachers and the impact of PD on student learning outcomes. For each teacher, they will compare student achievement in the four classes from year to year.

"Successful PD strategies also recognize that teachers have different attitudes and ideas about how technology should be used in education."

Meltzer says providing a collaborative environment and hands-on experience is vital to successful professional development. Follow-up support is also crucial, she adds.

"It's key, that follow-up – it's often what is missing," says Meltzer. She explains that having a support person on staff is ideal compared to an 800 phone number or an e-mail address. Teachers need to be able to get help quickly and easily. These teachers should also be reassessed after training sessions to determine the type of future PD they need.

Be realistic about timelines

When creating a professional development plan, school leaders should think long term because it takes time for teachers to integrate new technologies. "The research says it takes teachers

Acknowledge the challenges

Technology professional development is more challenging than other kinds of teacher training, simply because not all teachers are comfortable with technology. "They are used to doing things a certain way, and now you are bringing in something new," explains Meltzer.

Professional development that acknowledges that teachers have different comfort and skill levels with technology is more successful, too. It's best to divide teachers into groups according to their skill sets and tailor instruction to their abilities. It's hard to generalize training for all teachers, she explains.

Successful PD strategies also recognize that teachers have different attitudes and ideas about how technology should be used in education. For example, some teachers will use technology to create individualized learning plans, whereas others want students to create their own multimedia content or participate in collaborative learning projects with experts and scientists via the Internet. Each requires different tools and training. "The hard part is validating that there is more than one way of doing things," Coiro says.

Get past the obvious

The amount of research to determine what makes an effective technology professional development program is increasing. Although some of these findings may seem obvious, Meltzer says their practice is still not widespread due to a lack of support, funding and time in teacher's schedules.

Putting some of these strategies into practice in your schools could be exactly what you need to take your professional development program, and your teachers, to a new level of success.

Cara Erenben is an Ontario-based freelance reporter. Previously, she was a full-time school technology reporter for eSchool News *in Bethesda, Maryland.*

Recommended websites

"Preparing for New Literacies: Empowering Educators with New Models of Professional Development"
www.lite.iwarp.com/CoiroIRAPD2006.html

"An analysis of professional development in technology for elementary school teachers"
http://digitalcommons.fau.edu/dissertations/AAI3220673

by Jane Chamberlin Grove

Millennial Education

Preparing students for a knowledge-based world

With the help of interactive whiteboards students are motivated and developing important ICT skills.

At O'Neill Public Elementary School in Nebraska, technology integration specialist Katie Morrow sees the future in her classroom. She sees digital tools that will give her students the skills required in our 21st-century, knowledge-based society. And she sees children who learn quickly in a technology-rich environment.

Technology, according to Morrow, fuels students' desire to learn. "Kids can go through school playing the game and just getting by," she says. "They have to somehow get connected and get a reason to learn and grow. Technology can do that."

Morrow believes that the SMART Board interactive whiteboard is one digital tool that plays an integral role in motivating her students. She first saw the product at an education trade show in 2001 and thought it would help her incorporate multimedia activities into her lessons. As soon as Morrow began using the SMART Board interactive whiteboard in her classroom, other teachers at O'Neill followed suit and started asking the principal, Amy Shane, if they could have one of their own. As interest grew, Morrow and Shane were kept busy applying for federal grant money. "As more teachers saw the possibilities of SMART technology, they all wanted it," explains Shane, who is now superintendent for the O'Neill district. "They were surprised at how user friendly the SMART Boards really were. And they were pleased that it gave them the ability to reach all students in the classroom at one time – whether they were going to a website or doing some manipulatives in math – and that it held the kids' attention as much as it did." Now, after many grant applications and budget alterations, every school in the O'Neill district owns interactive whiteboards.

The investment, according to Shane, has paid off on several levels. Shane is a firm believer in technology in the classroom, particularly in terms of equipping students for a place in a knowledge-based society. "I think we have to prepare our students for the work world, which revolves more and more around technology," says Shane. "It's not just careers based on writing software or working on hardware, but everyday jobs – accountants and doctors. They're utilizing technology in their career fields more and more. I think we owe it to kids to provide them with the tools they need to get out there and thrive in the workplace."

Prompting the novice

But before ICT can impact students' career preparation, they must learn to use digital tools effectively. To help her K–8 students become adept with technology, Morrow relies on her SMART Board interactive whiteboard. It has been instrumental in helping Morrow face one of her major challenges – developing ICT skills in students who haven't yet learned to read or to use a keyboard or mouse. Even performing simple exercises on the computer can be problematic when students aren't able to read directions. But Morrow has found a solution.

In her computer classroom, Morrow begins the lesson at the SMART Board interactive whiteboard so students can watch her complete an exercise. Students then try maneuvering through the exercise using their fingers, not a mouse. "The SMART Board works well for modeling," says Morrow. "It previews and hopefully makes students comfortable enough that they can focus on the learning, not the technology.

"I'll be at the SMART Board at the beginning of the class," she explains, "and I'll say, 'Okay. Today we're going to drag three red circles over to the cherry tree.' I record these directions as an audio clip using my own voice, then attach the clip to a little picture of me. If students go back to their computers and can't remember what to do, they click on my icon and hear me give the instructions again." Thanks to the audio prompt, Morrow isn't stretched thin giving individual help, and students can work independently. "The results are so much

better," says Morrow, "when students actually work on their own without the teacher hovering."

If Morrow's lessons require students to access images or supplementary graphics, she looks to SMART's Notebook software Gallery for help. Because the Gallery is so intuitive, even young students with minimal spelling and keyboarding skills can perform searches and find the resources they need for particular lessons. "They can get to the Gallery and type in one word and find those icons," says Morrow. "I can pre-load the images they need to complete a project. For example, for grandparents' day we made little grandparent books in Notebook. I pre-loaded a bunch of pictures that went with the topic so they didn't have to search all over the Internet. This way, I can focus their attention so much better on the learning." Otherwise, hours of precious class time can be wasted slogging through sites not meant for young students.

"Technology opens so many doors. It enables them to continue to learn and seek out answers – and ask the questions that can lead them to new places."

Directing the cub reporter

The SMART Board interactive whiteboard has also proven useful for Morrow's older students. It bolsters ICT skills, inspires enthusiasm for learning and encourages collaboration. When most people picture video editing, for example, they envision a small, dimly lit room with space for one chair – two at the most. But with the help of her interactive whiteboard, Morrow has managed to turn editing and video production into an adventure the whole class can share – take the *Eagle Eye News* project, for example.

One of the most popular technology-related programs at O'Neill, the *Eagle Eye News* broadcast, involves fifth-grade students who produce their own news program about the school. The project is an interdisciplinary endeavor that culminates in the ICT classroom. "They're writing scripts," says Morrow. "They're reading and practicing oral presentation skills. Technology is just a part of it – not the focal point. In the end, they have the product to show everybody – a video with music and graphics."

And the process is collaborative, right down to the editing. Morrow likes to compile the news program on the SMART Board interactive whiteboard using GarageBand software. This way, she explains, "editing is much more of a full group activity because you can't get all the kids around a computer. Putting it on the SMART Board makes it so much more hands on for everybody, instead of just sending two students off to do it."

Morrow's students look forward to the *Eagle Eye News* broadcast all year, knowing they will be proud of the final product and that mom and dad will be glued to the television when it broadcasts on the local cable access channel. They are intensely involved in this multimedia project that develops skills across the subject spectrum.

Nurturing the technology enthusiast

Projects such as *Eagle Eye News* validate Morrow's theory that technology turns apathy to appetite when it comes to learning. Using her SMART Board interactive whiteboard to help students develop computer literacy skills, Morrow is encouraging their seemingly innate zest for technology. "Instead of just writing a report on a piece of paper and handing it to their teacher to get a grade," says Morrow, "they're now blogging and publishing on the Web, where the whole wide world is their audience. It's authentic." Morrow capitalizes on this digital zeal, hoping that it will create a thirst for learning that will continue well past graduation day. "Technology opens so many doors. It enables them to continue to learn and seek out answers – and ask the questions that can lead them to new places."

Seeking answers, Morrow believes, will become a lifelong quest for her students – a quest that leads to fulfillment in a new millennium where education is the perfect vehicle for success.

Jane Chamberlin Grove is an experienced Alberta-based writer and editor whose interests range from education and technology to the arts and translation.

Recommended websites

To view some of Katie Morrow's lesson plans and ICT ideas, visit www.mrsmorrow.com.

by Nancy Knowlton

Can 2 + 2 = 5?

Getting more than what is seemingly possible

Understanding that students are more tech-savvy than most adults can open the door to new classroom learning opportunities.

Making more from something than you might first think is possible. This is what we try to do at SMART every day. In fact, this very notion sparked the ideas for a new program and a new product that we're launching. But rather than simply tell you what these latest offerings are, I'd also like to share the inspiration behind these two new additions to our support for schools.

Reverse mentoring

A number of years ago, I was visiting a Teacher of the Year, and as luck would have it, the package of products that SMART provides in recognition of these wonderful teachers arrived at the same time as I did. As it was the end of the day, I offered to set up the system and help get him started. He declined my offer politely, saying that I didn't need to go to all of the effort.

Well, his students, not thinking that it might have merely been a polite offer with no real intent behind it (it actually was genuine), all chimed in to get him to ask me to help set up the new equipment so they could see what it was all about. He relented, and there was a beehive of activity in the room for the next 15 minutes as we assembled the floor stand, mounted the SMART Board interactive whiteboard, connected the interactive whiteboard and projector to the computer and then loaded the software.

I took just a few minutes with the teacher, showing him the basic functions of the Notebook application and other things that he could do with the interactive whiteboard. Then the deluge began. *Could you do this? How about that? What happens when...?* Not from the teacher, but from his students. Very quickly, they were up at the SMART Board interactive whiteboard, asking their questions and trying things out to see what would happen. The teacher and I moved off to the side, fascinated by the interaction between his students and the technology.

The teacher quietly admitted to me he didn't know very much about computers and that he hadn't really explored the Internet very much. He went further – when he learned he would receive a package of technology products in recognition of being named the Teacher of the Year, he felt overwhelmed and very insecure. Now, seeing his students' interest and fascination with the tools in their hands, he said that he had a new strategy – he would get them to teach him how to use the technology, and in the process, they would both enjoy their new learning environment.

The students' interaction that day had a profound effect on me and how I have thought about our products and their use in the classroom. I have often told this story and urged teachers and administrators not to forget people who might need some attention and development.

With this story in mind, we have now developed a live, online training program for students. It will be offered this summer for students in schools using our products who want to learn more about them so they can assist and support their teachers. Information detailing the instructions for registering and the dates and times of the training will soon appear on the training section of our website.

Students helping teachers helping students – now that's a powerful dynamic. It's also a dynamic that will continuously build on itself, creating new learning opportunities for everyone in the classroom.

The 600i – a new system

At SMART, one of our favorite words (and concepts) is integration. Integration is about more than just stapling components together – it's the synergy of the combination.

The SMART Board 600i interactive whiteboard system combines a variety of hardware and software elements in an integrated whole. Most apparently, the system comprises a SMART Board interactive whiteboard with a short-throw projector, both of which are mounted on the wall.

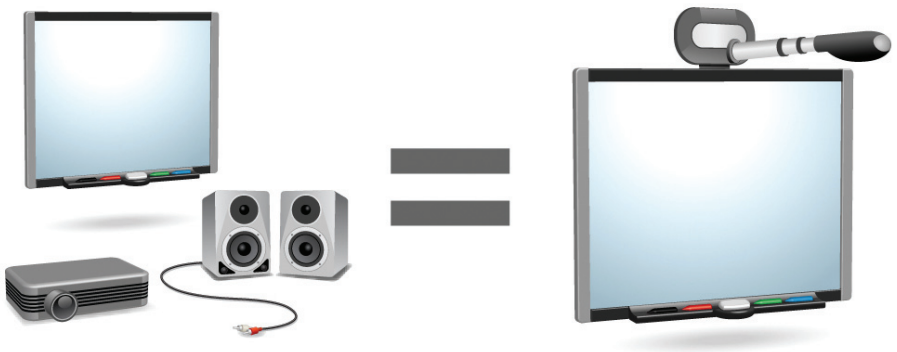
The whole system offers everything that the components offer – and more. The difference is in how the integration is implemented, and, in fact, this is what makes it a system. Here are some of the things that we did to make the 600i truly integrated.

System start-up

The control panel on the pen tray of the SMART Board interactive whiteboard has one button for easy start-up of the whiteboard, projector and computer. No remote control is required to start up or control the projector.

Start-up menu

The control panel launches an on-screen menu that makes it easy to switch between whiteboarding with a computer and computer-free whiteboarding, or to switch to another connected source (such as a DVD player or VCR).



"The SMART Board 600i interactive whiteboard system combines a variety of hardware and software elements in an integrated whole."

Extended connection panel

The extended connection panel allows for the easy connection of various peripherals (VCR, document camera, DVD player, etc.) to the interactive whiteboard for even more flexibility.

Integrated speakers

Two 20-watt speakers are built into the projector base that attaches to the wall. They look like part of the base; the grill is the only indication that speakers are present.

Speaker control

Volume control for the speakers is built into the control module in the pen tray of the SMART Board interactive whiteboard. A simple turn of a knob adjusts the volume. No remote control required.

Sum of its parts

The sum of all of these elements adds up to a system in which the pieces look like they fit together. It is also easy to use and anticipates any future devices that may be connected.

We've also gone a step further and made the system operate without having a computer connected. In technology jargon, we call this an appliance. ScratchPad software is built into a chip in the projector, making it easy to use the interactive whiteboard right away without a computer connected to the system.

There's so much more, but I think that this gives you the gist. There's synergy from the way in which the pieces have been integrated, making operating the whole system intuitive and simple.

We know that we aren't going to change the immutable laws of mathematics any time soon – but we'll keep trying in our own special way.

Nancy Knowlton is CEO of SMART Technologies Inc., the company in Calgary, Alberta, Canada, whose name has become synonymous with interactive whiteboards. Ms. Knowlton is one of the world's leading experts on technology integration, and she travels extensively speaking with educators on this topic. Here, in "Nancy's Notebook," she transcribes her notes on the subjects she hears about most in her travels.

by Will Richardson

Networks of Learning

Should schools promote online networking?

Will Richardson, internationally recognized read/write Web expert, discusses his thoughts on how and why educators should be incorporating the latest networking capabilities into their teaching practices.

Will Richardson

On my blog at Weblogged.com, I have a feature called a ClustrMap that shows where people who visit my site come from. And every time I look at it, I am humbled by what I see: little red dots representing tens or hundreds of visitors, covering just about every part of the globe. It just amazes me that the ideas I write about have an audience in China, Saudi Arabia and even Iceland. It's a powerful motivator.

But it's also a testament to the types of connections that any of us can begin to build in a world where creating and publishing content on the Web is now almost as easy as simply consuming it. The read/write Web (or Web 2.0 as some call it) is challenging many, if not all, of our long-held beliefs about learning, teaching and education in general. And the simple fact is that this new Web allows us to create and nurture powerful networks of engaged learners in ways that traditional schools simply cannot replicate.

The networks that support 65 million bloggers and millions more podcasters, videographers and others are being built on the shared passions of the participants. For the first time, it's relatively easy to connect to other people who want to learn and engage in conversations about the same things that we do, be that a favorite football team or a love of chocolate. Almost all of those red dots on my ClustrMap represent folks who are on some level passionate about the same topic that I am, namely figuring out how the tools and technologies of this new read/write Web are going to affect education as we know it. The fact that my blog allows each of them to interact with my ideas means that I am constantly learning, getting pointers on new resources or simply changing the way I think.

In today's digitally networked world, as educator and blogger George Siemens says, learning is not an event; it is a process. It is more about the relationships we build than the content we consume. In these networked worlds, we are nomadic in our learning, meaning we find what we need when we need it. We rely on others in the network to provide us with their own experiences and reflections that in turn inform our own thinking. In the process of the interaction, we learn important skills and literacies. We learn how to identify trusted sources of information. We learn to build intellectual relationships with those with whom we interact. We learn to take responsibility for our own learning.

Our students' future successes will largely depend on their ability to create and sustain these networks. And, in many ways, they are already experimenting with this. The tens of millions of adolescents who are participating at social networking sites like MySpace, Bebo and Facebook are engaged in connecting to others in powerful ways. Whether we realize it or not, a great deal of learning is happening in these spaces: learning about the best new music, the latest news and general shifts in the culture. There can be little doubt that the connections these sites facilitate are important and will only continue to strengthen.

For evidence of this, we need look no further than the emerging U.S. presidential election for 2008. Already, this is being called the "YouTube Campaign" because of the ways in which the candidates are performing the crucial job of building networks. Most of the declared candidates have blogs. Some of them actually allow supporters to create and maintain their own blogs on the campaign sites. And there are dozens

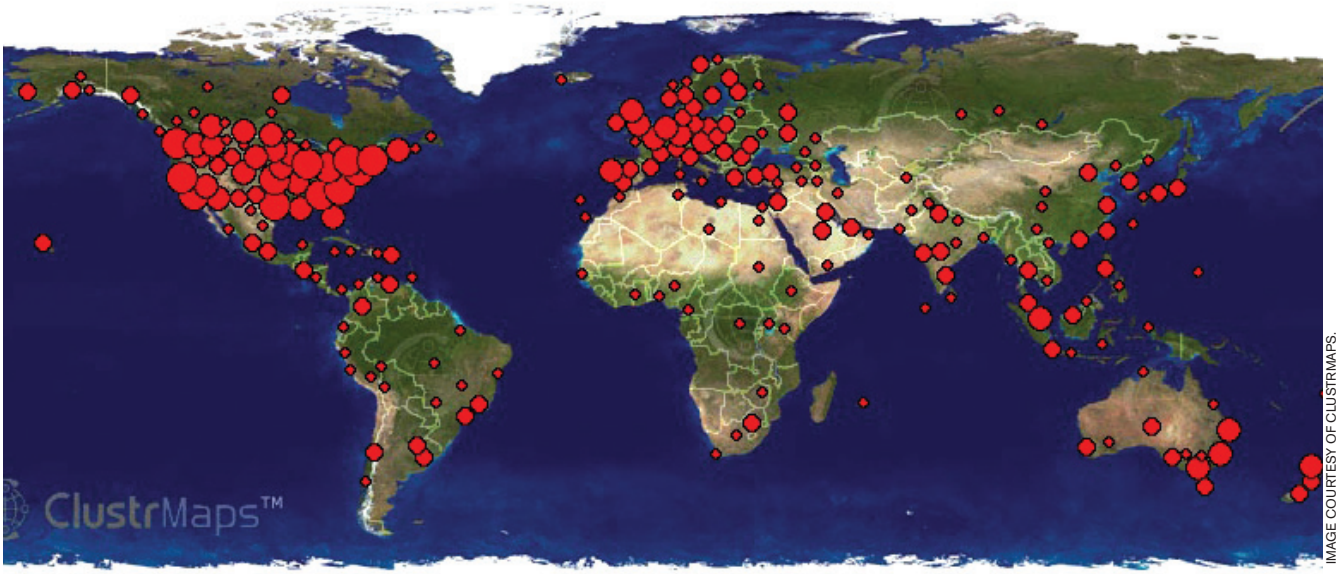


IMAGE COURTESY OF CLUSTRMAPS.

"Almost all of those red dots on my ClustrMap represent folks who are on some level passionate about the same topic that I am, namely figuring out how the tools and technologies of this new read/write Web are going to affect education."

of ways to connect to others using these new tools to create groups based on age or geography or interest. But all of these are glued together by the collective passion of individuals, and these spaces are transforming the way we think about campaigns.

Big media is figuring out this shift as well. When any one of us with a camera phone can begin reporting on an event almost as it happens, think of how that changes the roles of traditional journalism. As author and journalist Dan Gillmor says, in this environment, "my readers know more than I do." To that end, *USA Today* recently overhauled its website to allow for more connectability.

Now, we can build our own neighborhood of readers, respond to articles, create our own blogs, and track the activities of others. News consumption has become a social event.

For our students, the problem today is that very few schools are preparing them for this very different world. And the environments they are learning in look very little like the classrooms they find themselves in every day. Instead of teaching the nuances of network creation, we are blocking and shutting down our students' attempts to network. Instead of showing them how to create an online presence in a safe and ethical manner, one that will allow potential teachers to find them, we continue to have them work for limited audiences inside the school walls. And instead of engaging them in the work of global collaboration, we limit their interactions to those in their physical spaces.

This is a most challenging time for educators as we attempt to understand all of the shifts this read/write Web offers. If we really want to prepare our students for the future, we are going to have to re-envision our current classrooms and practices. Ultimately, if we are going to fully understand and develop the pedagogies of teaching with these new tools in the context of these new realities, we are going to have to own them for ourselves. As educators, we need to begin the work of building our own learning networks, of finding people we can learn from and of modeling that method of learning for our students.

Will Richardson is known internationally for his work with educators and students to understand and implement the tools of the read/write Web into their schools.

Recommended websites

Will Richardson's blog
www.weblogg-ed.com

Education blogs recommended by Will Richardson
www.bloglines.com/public/wrichard

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by Ellen Ullman

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Preparing students to succeed in the global workforce

You know students need to learn 21st-century skills to succeed in the global workforce, but what exactly are these skills, and how can you teach them to your students? To get some concrete answers to these questions, reporter Ellen Ullman talked to experts and educators who know 21st-century skills inside out. Here, she shares their expert advice on what these skills are, why they're important and how to incorporate them into your district's classes.

It's a Wednesday morning in February at the Academy of Integrated Humanities and New Media (AIM), a school within a school for juniors and seniors at Tamalpais High School in Mill Valley, California. Chelsea Walsh, a 17-year-old senior in the program, is working with a group of peers on a documentary film about "the truth of the American dream." By the time she graduates, she'll have produced four documentaries on local, national or global social issues. She'll know how to work collaboratively, and, like many AIM graduates, she'll have an easier time in college, thanks to her ability to problem solve, do extensive research, think outside the box, self-direct, manage her time and write for a global audience.

This is thanks to the school's forward-thinking approach to teaching. At AIM, the social studies and English teachers, for example, work as a team to teach typical academic subjects along with 21st-century skills, such as storytelling, editing, processing information and media literacy. And in computer class, students learn to use video cameras, editing software and other equipment to film and create their documentaries.

For Walsh, it's been a once-in-a-lifetime experience. "AIM is so much more real than regular high school, where the classes are routine and predictable," she says. "I've experienced things here [that] I'll experience for the rest of my life."

Collaboration was one experience that took a bit of getting used to. "In high school, you usually work alone and can guarantee the quality of your work. Everyone has different working styles. How do you compromise? My groups have had numerous issues, but what I've learned from dealing with that is invaluable."

Learning to identify and somehow ensure similar skills are being taught in your district's classrooms is a subjective endeavor, but it's not an impossible one.

Defining 21st-century skills

In April and May of 2006, Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills and the Society for Human Resource Management surveyed 431 U.S. human resources officials to examine employers' views on the readiness of recently hired graduates from high schools, two-year colleges, technical schools and four-year colleges. Seventy percent of those surveyed cited that incoming high school graduates had deficiencies in professionalism, punctuality, working productively with others, and time and workload management. The report also found that recent high school graduates lacked basic skills in reading comprehension, writing and math.

Surveys like this tell us that to properly prepare students for the workforce, curricula in our schools must be revised. The first step toward creating a new curriculum is asking, "What skills do kids need to be 21st-century citizens and workers?"

"We started with that question four and a half years ago," says Ken Kay, president of the Partnership for 21st Century Skills, an organization that defines itself as "the leading advocacy organization focused on infusing 21st-century skills into education."

> **"When you look at the 21st-century skills framework, engaging students with authentic lessons is the most powerful piece."**

The organization brought together the business community, education leaders and policymakers to define a powerful vision for 21st-century education. As a result, the Partnership created a fairly comprehensive framework for 21st-century learning that schools can interpret and build on. The following six categories make up the framework:

Core subjects
The core subjects identified by the No Child Left Behind Act are English, reading or language arts; math; science; foreign languages; civics; government; economics; arts; history; and geography.

21st-century content
The following content areas are critical to success in communities and workplaces, and should therefore be emphasized in schools: global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health and wellness awareness.

Learning and thinking skills
Students need to know how to make effective use of what they learn now and in the future. They can do this by developing the following thinking and learning skills: critical thinking and problem solving; communication; creativity and innovation; collaboration; contextual learning; information and media literacy.

ICT literacy
All students should be literate in information and communications technology (ICT). They should be able to use technology to learn, think critically, solve problems, use information, communicate, innovate and collaborate.

Life skills
Schools need to deliberately incorporate life skills into their pedagogy, including leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self-direction and social responsibility.

21st-century assessments
Authentic 21st-century assessments must measure all five of the previously mentioned categories: core subjects, 21st-century content, learning and thinking skills, ICT literacy, and life skills.

Putting the theory into practice

To help districts incorporate this framework into their curricula, Kay's team works with individual states and the Council of Chief State School Officers to create state partnerships. As of this month, three states – North Carolina, West Virginia and Wisconsin – have committed to 21st-century skill initiatives and systemic implementations that include developing new standards, conducting professional development and creating new assessments.

"One of the biggest challenges is, 'What does it look like in the classroom?' " says Kay. "Our state partners are part of the strategy to help us determine what professional development and assessment should look like."

For example, in Raleigh, North Carolina, the Partnership for 21st Century Skills works with the Center for 21st Century Skills, the nation's first dedicated center of its kind. Located within the governor's office, the center's mission is to help the state's students become competitive and prepared for the workforce.

Melissa E. Bartlett is the director of the center and a former teacher. She worked with the state board of education to interview businesspeople and create a new set of goals to prepare students for the future. As a result, 100 literacy coaches have been placed at middle schools throughout the state, with another 100 being added next year. The coaches, who are trained in ICT literacy skills, act as facilitators and trainers. They create model lessons and coach the teaching staff, as well as set up professional learning communities to promote teaching that will ensure students are ready for the future – even after these coaches leave the school.

The State of 21st-century Skills Today

Each fall, K–12 students, teachers and parents from all 50 states share their views on education, technology and 21st-century skills through the NetDay Speak Up online surveys. The 2006 survey included questions to collect student, teacher and parent perspectives on science and math instruction, the impact of technology on teaching and learning, and the skills students need to be well prepared for the competitive economic challenges of the 21st century.

Here is a sampling of the Speak Up 2006 preliminary findings:

- Fewer than 50 percent of students, parents and teachers say their schools are doing a good job of preparing today's students for 21st-century careers
- Students, teachers and parents agree that critical-thinking skills are the most important skills for jobs of the future. However, students also believe that acquiring technology skills are vitally important, whereas parents and teachers place greater value on work ethic and communications skills.
- Sixty-three percent of today's high school students want more job-related skill development before graduation
- Eighty percent of parents say that their schools should better prepare their children for the world of work or postsecondary education before graduation
- Students want to learn math and science within the context of solving real-life problems and by talking with practicing scientists and mathematicians

For more information, go to www.netday.org.

Experts say technology is a powerful tool for teaching students 21st-century skills – it allows educators to create more authentic lessons that engage students in learning.

Where does technology fit in?

Technology is an essential ingredient for teaching 21st-century skills – if it is properly integrated into the curriculum. "When you look at the 21st-century skills framework, engaging students with authentic lessons is the most powerful piece," says Kent Williamson, executive director of the National Council of Teachers of English (NCTE). And technology, as Williamson explains, opens doors to student participation in more interesting and sophisticated ways.

He understands that many districts have reduced the issue of technology to one of teachers knowing how to use computers. The key, he says, is having the vision to understand how to help kids learn through the use of many different forms of new technology. "There are exciting things going on all over: classes using wikis, blogging, doing after-school multimedia programs and creating films."

Districts that lead the way

Metropolitan School District of Lawrence Township

One school implementing exciting ways of using technology to teach 21st-century skills is the Metropolitan School District of Lawrence Township in Indianapolis, Indiana. For instance, two instructors, who teach a combined English and history class at one of the district's high schools, recently put together a unit on the Great Depression. Leona D. Jamison, the district's director of professional development, says the teachers approached the subject by asking, "How can our students relate it to the world today, as well as the future?" Instead of just reading *The Great Gatsby*, the English teacher offered a selection of books dealing with problems related to the Depression. Students formed small groups to gather information using the Internet on their topic of interest. They learned about different perspectives and utilized their information-literacy skills to discover what events led up to the Depression. Next, they formed study groups to further discuss these events. This type of work develops higher order thinking skills as the students evaluate and synthesize what they learn.

"It's not just dates and meaningless facts," says Jamison. "Rather, what does this mean for the future? How does it affect our economy?" As students conducted their research and answered questions, they honed their information-literacy skills further. For example, students had to determine if a blog's author was reputable. They learned to collect, compare and evaluate multiple information sources. "Technology is the tool they use to gather information and then process it, whether they put it into a table or make a presentation," says Jamison. For the last part of the unit, each group did a performance-based project – perhaps a PowerPoint presentation, a podcast, a three-dimensional chart or a video. Some of the projects included music, art or dance.

As you might imagine, it was quite a challenge to begin teaching this way, says Jamison. She explains that they had to change the way they taught and consider what factors lead to a lack of technology literacy and global awareness. After much research, the district's interpretation of teaching 21st century skills was to focus on seven skills, starting with basic literacy and moving on to visual literacy, technology literacy, information literacy, higher order thinking skills, self-direction, and cultural and global awareness.

The next step was providing lots of professional development and building learning communities to help students and teachers understand the importance of 21st-century skills. To provide ongoing support, Lawrence Township trained 34 master teachers to go into each school and serve as coaches to help teachers integrate this new style of teaching into their classrooms. "We believe we designed instruction that is meaningful and real for kids and the world they will live in," says Jamison.

Napa New Technology High School

Napa New Technology High School (NTHS), in California, is another school that has used technology extensively in its efforts to bring students the skills they need for the future. The school opened in 1996 and is the first school of its kind. It is a collaborative learning environment that is 100 percent project based. Classes are interdisciplinary and technology is integrated into every class. Seniors complete

> **We believe we designed instruction that is meaningful and real for kids and the world they will live in.**

year-long internships at local businesses, and every student graduates with a digital portfolio.

In 2000, the New Technology Foundation was established and began opening other schools based on the successful NTHS model. Today there are 25 such schools.

Students graduate having gained what NTHS feels are essential 21st-century skills. They master eight learning skills: content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy. By the time a student completes high school, he or she will have completed 240 projects and presentations.

To begin with, the school struggled with project-based learning. The founders needed to create a way to keep each project's elements – standards, rubrics and various pieces – in a single document. They came up with an online project briefcase that serves as an environment in which the students can see everything they must do to complete the project, including a rubric assessment and a calendar of all benchmarks. "Thanks to the briefcase, each student knows what's expected and how he or she will be graded," says Bob Pearlman, consultant and director of strategic planning for the New Technology Foundation.

For each unit, students form project teams, write a contract delineating everyone's tasks and develop their own rules. They give a group presentation and share one grade. Afterwards, they rate each peer's performance. Their report cards, which are separated into the eight learning-outcome categories, are online so students can click on the links to see what they need to learn along with any rubrics for improvement.

"You can't develop most of these skills without doing projects," says Pearlman. He explains that students can't learn collaboration without working in a group. And while students could take a public speaking course to learn about oral communication, they shouldn't have to look outside of school for these skills. "Every one of our projects includes a presentation that is given to an external audience. That way, those skills are truly embedded."

Bring 21st-century learning to your district

Although determining which 21st-century skills are most important in your district and how they should be incorporated into the curriculum is a personal choice, you have the tools to get started. Consider the framework the Partnership for 21st Century Skills has created; consider how other schools are already teaching 21st-century skills, and then leap in and give your students the skills they'll need to thrive in the global workforce.

For states and districts that want to increase their understanding of 21st-century skills and incorporate them into their classrooms, North Carolina's Bartlett suggests finding a champion. "We have the backing of the governor and that helps a lot." The first step, she says, is choosing to be a pocket of excellence. "Set up a committee in your school to help teachers do project-based lessons, highlight those lessons, and bring them to scale at your school. Write bills to congress for literacy coaches, grants to obtain laptops, articles to flaunt your school's work and submissions for awards and grants. All of these steps are the keys to getting backing." She also urges people to join the Partnership for 21st Century Skills.

Vist these websites to learn more.

AIM
www.tamaim.com/main/about.php

Metropolitan School District of Lawrence Township
www.ltschools.org

New Technology Foundation
www.newtechfoundation.org

New Technology High School
www.newtechhigh.org

The Partnership for 21st Century Skills
www.21stcenturyskills.org

The Partnership for 21st Century Skills Framework
www.21stcenturyskills.org/documents/Frameworkflyer040606.pdf

21st Century Skills
www.ncrel.org/engauge/skills/skills.htm

by Diane Curtis

Making STRIDES in Miramichi

Triumphs abound as a superintendent's vision and SMART Board interactive whiteboards combine to create an integration success story.

When it comes to integrating new technology into a district, two essential elements can mean the difference between achieving average results and achieving sensational success: great technology and a leader with a clear vision. Luckily for School District 16 in Miramichi, New Brunswick, Canada, they've got both – superintendent Kathy Baldwin and SMART Board interactive whiteboards.

Under Baldwin's leadership, district 16 is the best-scoring district in the province on fifth- and eighth-grade math and second-grade language arts standardized tests. This success, she believes, is partly due to her decision to integrate SMART Board interactive whiteboards into her district's classrooms.

"It's the technology tool that makes the most difference in our children's instruction," says Baldwin. "The more children are engaged, the better learning they will have and the higher academics they'll achieve."

Leading the way

Baldwin may attribute the high test scores of the 7,000 students in the 21-school district to the 350 interactive whiteboards, but her ability to see the potential of the technology and to understand how to successfully integrate it into classrooms was also crucial.

She explains that she tries, "as much as possible in administration meetings and workshop presentations, to incorporate and promote the use of SMART's technology. I have a commitment to work toward ensuring that all teachers in the district have this capability in their classroom."

When district 16 bought their first interactive whiteboards about six years ago, they planned to use the products as a videoconferencing tools, but it quickly became clear that the technology could do much more.

"When we started implementing [them], we realized [they] had a lot more potential than that," says Baldwin. "It became a goal that we would have one in every classroom."

But rather than impose this new technology on teachers, she opted to put the interactive whiteboards in the classrooms of teachers who showed interest in them and let awareness build naturally. And, through word of mouth and witnessing the success of students in classrooms with SMART products, many more teachers became converts. Today, 45 Miramichi teachers, including Baldwin, have been recognized by SMART as SMART Exemplary Educators for their innovative use of interactive whiteboards to improve student learning results and their willingness to share their experiences with other educators. In fact, district 16 has been designated as the first SMART District in North America – a testament to the successful integration of SMART's products and to Baldwin's vision.

Baldwin also took innovative steps to build a base of lesson activities so teachers would have resources to help them easily incorporate the technology into lessons. One ongoing initiative is a monthly contest in which the teacher who produces the best lesson activity using Notebook software is awarded a $500 prize. The enthusiasm the project has generated is clear – the district gets 60 to 70 entries each month.

The interactive lesson activities that teachers create help students connect with their lessons. As a result, they are more involved and able to improve essential skills such as writing.

Two of the school's technology mentors Joey Savoy (a former teacher) and Rick Hayward (a former principal) post these lesson activities on an internal website so they can be shared with teachers throughout the district. So far, more than 300 lesson activities designed for use on the interactive whiteboard are available for district teachers to peruse.

"I swear you'll love this one!" wrote one teacher who submitted her Poetry in Response to Art lesson activity to the contest. She explained that she presents it in the beginning stages of her poetry unit, and uses songs to help students "identify why they think poets write what they do." The teacher outlined how she starts the lesson by projecting an image of Van Gogh's *Starry Night* onto the SMART Board interactive whiteboard and asking the students to write down any words that come to mind.

The teacher then projects the lyrics to Don McLean's song "Vincent (Starry Starry Night)" on the screen, and together, she and the students read the lyrics, which are about Van Gogh's life. Afterwards, she connects the painting to the subject of Don McLean's song and provides a detailed background of Van Gogh's life via Internet links.

In her lesson notes, she writes, "[The students'] writing really starts to come alive with just a little background information on Van Gogh.... The SMART Board works so well here because it gives such a wonderful, grand presence to his painting and all its nuances."

> "The more children are engaged, the better learning they will have and the higher academics they'll achieve."

"It's a beautiful thing because the song takes on a whole new meaning for the students – a fantastic way to demonstrate *making* meaning, as opposed to simply *taking* meaning." She explains that the SMART Board interactive whiteboard "is a magnificent tool to share the despair and symbolism of Van Gogh's paintings, and the music and slide show progress simultaneously to capture Van Gogh's suffering and alienation."

Letting teachers shine

From this example, it's clear to see that Baldwin's efforts to generate excitement around the technology are working. Her encouragement and support have resulted in teachers using the technology in inventive and enthusiastic ways.

From math and science to physical education (PE) and art, interactive whiteboards are used in every subject area throughout the district. Math teachers use them together with virtual graphing calculators in order to give students a chance to perform hands-on measuring on the screen. PE teachers use them to train students on GPS and geocaching, and then students apply what they've learned in a cross-country skiing session. Art teachers use the technology to make lessons in symmetry and depth more understandable and to show the progression in creating a particular artwork. The examples go on and on.

Take Celine White, who teaches several courses in the French immersion program at St. Andrews Elementary School, for example.

White says the interactive whiteboard "is the focus of our classroom." During a recent social studies lesson, students studied the Chinese New Year and used the interactive whiteboard to see and hear Chinese speakers reciting Chinese poems. "This allowed us to better appreciate the Chinese language as well as get to know poem forms and purposes," says White.

On the same day, they used the technology to visit the Great Wall, the Forbidden City and Tiananmen Square online. Then, each student came up to the screen, typed in his or her name and watched the immediate translation of the name into Chinese. And this global experience happened, notes White, "from the comfort of our cozy, rural New Brunswick classroom."

White says that unlike the days when she taught with chalk and blackboards, she's never had a student balk at coming up to the front of the class to work out a problem or illustrate a concept on the SMART Board interactive whiteboard.

Teachers' creative and innovative use of interactive whiteboards helps to give students a clear understanding of subject matter and create opportunities for hands-on learning.

> **“The different way of teaching, using the language of technology that is second nature to so many young people, got through to them, and they had their first math successes.”**

Others, like Savoy, commend the power of the interactive whiteboards because they make it possible to teach to individual learning styles. He explains that teachers can use the interactive whiteboards to help visually impaired learners simply by making the font size bigger on the screen. Auditory learners can benefit from teachers adding sound to enhance a lesson created in Notebook software. Tactile learners can touch the interactive whiteboard and move or manipulate objects and words.

As a former middle school teacher, Savoy first used the SMART Board interactive whiteboard to help struggling math students outside of regular class. The capacity for students to participate in interactive examples of math concepts, such as physically removing part of a circle and then creating the corresponding fraction, gave the students a clear illustration of what a fraction looks like. “The kids were excited. They thought it was so cool,” he recalls. “The different way of teaching, using the language of technology that is second nature to so many young people, got through to them, and they had their first math successes. When they went back into the classroom, they were no longer intimidated,” he says.

Students are having increased success in math because interactive whiteboards make it possible to teach to individual learning styles.

Reaping the rewards

But it’s not just the students who are benefiting from Baldwin’s progressive thinking. The introduction of SMART Board interactive whiteboards has revitalized teaching for veterans and nonveterans alike, says Baldwin. Teachers are now becoming more sophisticated in their use of interactive whiteboards, and some teachers have started using the technology in conjunction with SMART’s Bridgit conferencing software to connect classes within the district and around the world. Two Miramichi schools are working on a tulip project with schools in Texas to compare how well tulips grow in different parts of the world. Six district 16 schools have joined forces with schools in Holland to explore differences (and commonalities) in lifestyles, pop cultures, sporting activities, political relations, water systems and histories.

Teachers say they are rejuvenated by the teaching possibilities the technology provides, the enthusiasm of the students, the improved quality of students’ work and the rising test scores. In fact, Baldwin says several teachers postponed their retirement dates because they are having so much fun with the new, and what they consider improved, way of teaching. Others, like technology mentors Savoy and Hayward, changed the direction of their careers. “I was one of the first principals to get a SMART Board,” says Hayward. “The reason I’m not a principal now (and instead, a technology mentor for the whole district) is that I got so excited about the potential of SMART Boards and how to use them. Here I am at the end of my career having the best time of my life.”

With a clear vision and the right technology, Baldwin has led the staff of district 16 through more than a successful technology implementation – she’s helped invigorate teaching in a way that will help Miramichi make learning strides for many years to come.

To learn more about School District 16 in Miramichi, New Brunswick, visit **www.district16.nbed.nb.ca**

Meet senteo™

SMART's interactive response system

We'd like you to meet Senteo™. Intuitive. Great with kids. Excellent conversation starter. Very compatible – loves the SMART Board™ interactive whiteboard and Notebook™ software.

You're perfect for each other.

You can meet the Senteo interactive response system in June '07. Visit **www.smarttech.com/senteo/ie07** for a full introduction.

SMART Technologies

by Charlene O'Hanlon

Gazing into the Crystal Ball

Superintendent shares strategies for planning future education technology purchases

When it comes to planning future technology projects, successful districts don't need the talents of a soothsayer. That's because they've already got superintendents who are savvy enough to see what's coming down the road without having to look into a crystal ball.

We asked one superintendent who always seems to be a few steps ahead of the crowd to share the methods she uses when it comes to preparing for future technology initiatives.

So read on to gather tips for planning your district's technology future from Rebecca Perry, superintendent of Alexandria City Public Schools in Alexandria, Virginia.

Get informed

Whether your technology plans involve building a new school, renovating a current school or simply updating classrooms, Perry says the first step to successfully planning for future technology initiatives is becoming informed. And the best way to get the information you need is by doing research, such as reading technology-focused publications and journals, and attending trade shows and vendor presentations.

This strategy serves the superintendent well whenever she plans for new technology in her district.

When installing a wireless network throughout her district four years ago, Perry and her staff did much research before deciding whether to purchase an 802.11a network or an 802.11g network. This included talking to vendors, reading about wireless standards and even testing out some wireless networks.

For Perry, simply buying the most popular or newest technology without first doing some research wasn't an option because she knew she needed to understand if the tools met her needs first.

Through her research, Perry discovered that the 802.11a technology offered a higher network speed (54 Mbps verses 11 Mbps), was better suited for an enterprise roll out (such as a school), and with 802.11a, the district could install more access points, which meant teachers and students using laptops were more likely to get a strong signal.

In the end, Perry choose an 802.11a wireless network instead of an 802.11g network because it was better suited to her school's needs and requirements.

Sage Advice – Planning for the Future

- ✔ Get informed
- ✔ Look for outside support
- ✔ Don't be afraid to dream – BIG!
- ✔ Surround yourself with the right people

Her investigation has also saved the district money in the long run. Many districts that purchased an 802.11g network a few years ago are now switching to an 802.11a network, after discovering from experience the same limitations that Perry and her district learned from research.

Look for outside support

For Perry, preparing for her district's technology future also includes taking advantage of opportunities outside her schools. She has learned from experience that the best place to begin looking for these opportunities is in her own backyard.

The Alexandria City Public Schools District is not in an economically wealthy area, but despite this, the district has excelled in providing students a technology-rich learning experience. Students in grades 9–12 are equipped with their own laptops for the school year, which Perry says helps them become more comfortable with using technology and develop into technologically proficient workers down the road. So when the City of Alexandria decided to build a citywide, low-cost wireless network for its residents, Perry immediately saw how this could benefit her students.

> "I don't know of any CEO who has the time to know technology inside and out and keep on top of all the advances."

Soon, students will be able to use these laptops to access the school's network from anywhere in the city. Although access will cost users $21 a month, 24 public areas in the city will be designated as free access zones.

Such access allows the school district to extend its network far beyond the classroom walls, which Perry says furthers the district's vision of equipping students with cutting-edge technology tools for learning.

"I believe the most proactive thing we can do for our children is to provide them with higher level thinking skills so that they can solve problems and meet the challenges of tomorrow – whatever they might be," says Perry, "and such tools help make that happen."

Don't be afraid to dream – BIG!

Another important step in creating future technology plans for your district is having a dream or a goal to work toward.

In Perry's district, a major goal is for laptops to help provide individual, specialized support to students, inside and outside the classroom.

As part of the work to achieve this goal, the schools have customized each of the students' laptops, depending on their classes, schedules and after-school activities, to give

them the information they need right at their fingertips. "So if a student has a limited English proficiency, we can load up programs in their native language," says Perry. In addition, all the laptops have an SAT tutorial.

The district is also using this technology to achieve its goal of helping students become more environmentally aware. Next year, when their new high school opens, students will have a map of the building on their laptops.

This new high school will be LEED-certified (a market rating developed by the U.S. Green Building Council to measure how sustainable a building is). A control room at

Setting major goals for your district, such as becoming paperless or more environmentally aware, can help you when it comes to creating future technology plans for your schools.

the school will measure things such as water, electricity use and cesspool capacity. Each laptop will include a link to the control room so students can actually see how much energy is being used. "We're trying to get kids interested in what's happening within the building," says Perry. She plans to take advantage of the new school as much as possible to educate students about the environment.

The district has also implemented a paperless classroom pilot program, in which a few classrooms are using laptops exclusively – no notebooks, no textbooks and no handouts. "We're wireless – now we need to be paperless," says Perry.

Here, Perry is working toward a very specific goal. "I would like to see kids not carrying textbooks home. I would like to see the laptop not stuck in a backpack along with 20 books – I would love to see students using the laptops instead of the [traditional] books." In fact, Perry adds, as the district adopts new textbooks, one major consideration in the selection process is whether the text and the accompanying teaching and learning materials are available online.

Surround yourself with the right people

A final, but important, piece of advice that Perry offers is that when you're planning for technology, don't expect to be able to do it all alone. "I don't know of any CEO who has the time to know technology inside and out and keep on top of all the advances," says Perry. She feels the same is true for superintendents, which means they need the right kind of people to help.

"In our case, we have an instructional technology and an administrative technology side," explains Perry. Although the administrative person develops the technology vision, Perry feels "the instructional technology person should be a teacher and be able to relate to teachers but also have an in-depth knowledge of the technology that's out there and available."

Having an instructional technology staff member with a lot of know-how that can work within your administrative vision is key when it comes to reaching your future technology goals.

Your future awaits

If you're informed, watching for opportunities to gain community support, dreaming big and recruiting the right people – you'll be able to do more than just see into your district's technology future; you'll have the means to get there successfully.

Getting Informed

The following are some examples of resources you can use to become more informed about technology:

eSchool News
www.eschoolnews.com

National Educational Computing Conference
http://center.uoregon.edu/ISTE/NECC2007

The Consortium for School Networking
www.cosn.org

International Society for Technology in Education
www.iste.org

Weblogg-ed
http://weblogg-ed.com

by Matthew Miller

Speaking of Technology

Rita Oleksak explores technology's role in foreign language education

Rita Oleksak

Rita Oleksak has been a dedicated teacher, administrator and advocate of foreign language education for more than 25 years. Currently, Oleksak, the director of foreign languages and ELL for Glastonbury Public Schools in Connecticut, is acting president of the American Council on the Teaching of Foreign Languages (ACTFL). As president, she had the honor of speaking before the U.S. Senate Subcommittee on the Oversight of Government Management, the Federal Workforce and the District of Columbia earlier this year about "Ensuring America's Place in the Global Economy by Building Language Capacity in the Schools."

"This is a very exciting time in foreign language education," said Oleksak upon her election as president of ACTFL. "It is imperative that we provide opportunities for all children to become proficient in at least one other language and culture in addition to English."

We spoke with Oleksak about her continued efforts to make foreign language a regular part of K–12 education. Coincidentally, the same day, she welcomed 24 French students to her district as part of an 11-year-old student exchange program with Dinard, France.

Q: How have global communication tools helped students learning foreign languages?

A: Language is not only a tool for communication, it is a necessary skill for cultural understanding. It really helps us see the bigger picture in a global economy. The Internet has made a huge difference in bringing foreign language instruction to life in the classroom since it provides students and teachers with access to the whole world at the click of a mouse. Additionally, our district is in the process of exploring grant opportunities, in collaboration with higher education institutions, to develop podcasts with college students abroad that can be shared with students in the foreign language program.

Q: What technologies are making foreign language teaching easier and more effective?

A: Over the last few years, we've seen great success in the advancement of technologies such as the Internet, audio and visual enhancements, the use of distance learning, discussion boards, graphic organizers and voice-over Internet protocol (VoIP). Another essential tool in our classrooms is the use of the Internet to establish electronic communication, which has allowed our students in Glastonbury to form friendships with their correspondents in France.

There is also the ability to capture information and display it using projectors and interactive whiteboards, and real-time videoconferences and live chats continue to play a significant role in education by allowing students to explore the world through the computer. I've also seen recent improvements with online and virtual courses. This technology doesn't only benefit students, but is proving to be a big push in the delivery of professional development to teachers.

Q: What's the purpose of ACTFL's "Discover Languages … Discover the World" campaign?

A: The purpose of this long-term, sustained public advocacy campaign – we're hoping 10 years and beyond – is to raise awareness about learning languages. While we were originally targeting

February as the month to focus that extra push, we want teachers and students to know that they can celebrate languages year-round.

Currently, one of the things we are advocating, which was emphasized in our testimony to the Senate Subcommittee in January, was the need for legislation for funding to help support this campaign, especially when you're dealing with districts where teachers are working by themselves. What we really need is a coordinated effort among government agencies and educators to develop long-term programs in foreign languages starting at the earliest possible grade levels.

Q: Have you noticed any trends in student enrollment in foreign language courses?

A: The number of foreign language students is increasing in our district. More than 95 percent of our high school students are taking at least one foreign language, and it's not a graduation requirement. We also start foreign language instruction in first grade with Spanish, and we require foreign language study in our elementary schools. But we couldn't have done this without strong support from parents, our board of education and our community.

It really has to do with keeping people informed and helping everybody understand.

Q: What can schools do to encourage their students to enroll in foreign language courses?

A: It's important to make connections in English language arts and social studies classes in order to talk with students about how learning another language can help them better understand different cultures. Schools also must educate the public that foreign language should be a natural extension of the elementary, middle, high school and college curriculum. It is a skill set that students may use in the job they get, and it will definitely give them an edge to get a job. Additionally, foreign language teachers are fabulous advocates in their own right for their programs. In the past, some of our parents and community members might not have had the best foreign language experience, so we need to invite them into our classrooms and show them that foreign language instruction has changed, and with the additional support of technology, kids' learning is real, integrated, fast-paced, exciting and highly accessible.

Matt Miller is a senior Web editor for Chapman University in Southern California. He has been involved in print and online publishing for more than 10 years.

Rita Oleksak's recommended foreign language links

Ensuring America's Place in the Global Economy by Building Language Capacity in the Schools
www.actfl.org/i4a/pages/Index.cfm?pageID=4553

American Council on the Teaching of Foreign Languages
www.ACTFL.org

Glastonbury Foreign Language Department
www.ForeignLanguage.org

Joint National Committee for Languages and the National Council for Languages and International Studies
www.LanguagePolicy.org

by Wesley Fryer

Top-Level Bloggers

Social technologies move into the office

Master blogger Wesley Fryer uses this installment of Tech Trends to highlight administrators who blog and the success they're having.

Blogging may be viewed with a great deal of suspicion and trepidation in many schools and communities around the world – but some administrators have discovered that blogging actually increases their productivity while also connecting them to colleagues, teachers, students and parents.

These administrators are using blogs to obtain feedback on projects and ideas and to develop personal learning communities (PLCs) to model best practices for other educators around the globe.

Improving communication

Under the leadership of principal Tim Tyson at Mabry Middle School in Cobb County, Georgia, blogs have become a primary means of communication for school counselors, media specialists, nurses and the principal. In fact, Mabry's website has the most extensive list of school administrator and support-personnel blogs I have seen to date.

In a posting from September 2006, "CRCT Data from May, 2006, Posted," Tyson reveals the power and potential of blogs to enable qualitatively different conversations between campus principals and parents. He explains that with traditional notes or newsletters sent home to parents, principals and teachers are sharply limited in the number of words, pictures, tables and charts they can use. With a blog post, however, he can use as much text as he needs to communicate the message he wishes to convey.

When it comes to test scores for example, a short paragraph in a newsletter is often insufficient. But by sharing his insight via his school blog in the fall of 2006, Tyson was able to provide parents with hyperlinks to additional materials to give context to student grades, including an extensive comparison of student test results from prior years.

Fellow principal, Tim Lauer, of Meriwether Lewis Elementary School in Portland, Oregon, has also discovered the power of blogging when it comes to keeping the lines of communication open. Lauer uses his blog to frequently "tell the story" of learning activities that take place inside and outside of his classrooms. From Earth Day activities to musical performances, Lauer updates his blog to keep parents and other community constituents continuously informed.

If teachers are to adopt innovative technology on a broad basis, they need administrative leadership and a model of effective use in the classroom. The frequent updates teachers make to the "Meriwether Lewis Elementary School Classroom Notes" website are evidence that principal Lauer's effective modeling of social media use is contagious in his school's culture.

Sharing experiences

Other education administrators like Miguel Guhlin, director of instructional technology for San Antonio Independent School District in Texas, use blogs to connect, reflect and collaborate with peers around the globe. Over the past two years, Guhlin has used his blog, "Around the Corner v2," to reach out to thousands of educators around the world to not only share best practices from his own district, but also to seek feedback and input from others on ideas and projects.

Ewan McIntosh is a school administrator responsible for overseeing a national educational blogging and learning project in Scotland. McIntosh uses his blog to give updates on the work of teachers and students in the Scottish schools he supports. He also shares his reflections on the successful

and not-so-successful ways new social technologies are being used and implemented by schools in the United Kingdom. In addition to posting reflections, ideas and questions, McIntosh regularly shares recordings of presentations he gives around Scotland as downloadable MP3 audio podcasts.

McIntosh was a keynote speaker in the 2006 K–12 Online Conference, an online event that focuses on the use of Web 2.0 tools in classrooms and best professional practice. McIntosh spoke on the subject of professional development. By sharing his own personal journey of learning and leadership in 21st-century schools, he has extended his personal sphere of pedagogical influence far beyond the geographic boundaries of his island nation. A quick glance at the ClustrMap for McIntosh's blog reveals the global reach of his ideas and conversations with other education leaders.

"Administrators are using blogs to obtain feedback on projects and ideas and to develop personal learning communities to model best practices for other educators around the globe."

Learning from peers

Educators and professors involved in preparing the next generation of school administrators are also using blogs in coordinated efforts to promote the effective use of administrator blogs.

"LeaderTalk," a group blog led by Dr. Scott McLeod of the University of Minnesota, aspires to be "the voice of the administrator" in the realm of education blogs and "the place to go for insightful, thoughtful, reflective commentary about what it means to be a P–12 administrator today." On "LeaderTalk," over 40 different school administrators share their perspectives, daily challenges and visions for the future with a global audience of readers.

Another excellent team blogging effort by school administrators is "The Pulse," *District Administration* magazine's dynamic blog. The blog is aimed at inspiring critical thinking, and contributors include David Thornburg, Roger Shank, Gary Stager, Susan Ohanian, Alfie Kohn and Will Richardson. "The Pulse" features a diverse array of voices challenging administrators to look beyond their own contexts and seek solutions together. As team blogs, both "LeaderTalk" and "The Pulse" model the idea that 21st-century leaders collaborate on a regular basis to address challenges, solve problems and think outside the box in ways others in their schools may not consider possible.

Blogging gets bigger

Schools need good leaders to be successful in the fast-paced ever-changing world of digital and global learning. The use of blogs and other social media tools by the administrators highlighted in this article represents not only the cutting edge of technology use by leaders, but also exemplary modeling of lifelong professional learning. Effective leaders in the 21st century cannot afford to live on islands of isolated thinking. The challenges facing schools and school leaders are diverse and dynamic. The resources available via the interconnected network empowered by read/write Web technologies like blogs are plentiful, however. Good leadership matters, and good leaders are increasingly collaborating online through their blogs and other digital social networking technologies.

Wesley Fryer, blogs on "Moving at the Speed of Creativity" and recently started a social network for parents and other caregivers called "Digital Dialog."

Recommended websites

Mabry Middle School's staff blogs
http://mabryonline.org/blogs

Tim Tyson's blog
http://mabryonline.org/blogs/tyson

Tim Lauer's blog
http://lewiselementary.org/principal

Meriwether Lewis Elementary School's staff blogs
http://lewiselementary.org/notes

Miguel Guhlin's blog
www.edsupport.cc/mguhlin

Ewan McIntosh's blog
http://edu.blogs.com

Dr. Scott McLeod's blog
www.leadertalk.org

Wesley Fryer's blog
www.speedofcreativity.org

by Cara Erenben

Tools for Schools

Digital resources for the interactive classroom

Go digital

KnowledgeBox 4.0, from Pearson Digital Learning, helps K–6 teachers integrate customized, standards-based digital content into daily instruction. This digital learning system gives classroom teachers access to a wealth of standards-based multimedia activities for reading and language arts, math, science, and social studies. Ideal for collaborative learning environments, the lessons incorporate movies, hands-on activities, engaging stories and other materials for self-paced learning. This digital learning system includes more than 240 standards-based lessons and tools that allow teachers to build and share educationally sound, engaging lessons and units. KnowledgeBox 4.0 also enables teachers to print workbooks. New customers have a one-time set-up cost of US$7,485, which includes the server, installation on up to 40 computers, in-service training, and supporting materials and guides. From there, it will cost $11 per student on an annual subscription basis or $40 per student for a continuous license.

Go to www.pearsondigital.com/knowledgebox.

Master math

With MathScore, teachers no longer have to think up math equations or manually write out problems on a chalkboard. Whether the lesson is about basic addition, fractions or linear equations, using MathScore on an interactive whiteboard promises to save teachers valuable time and energy. This Web-based software automatically generates hundreds of problems for approximately 200 math topics that are suitable for students in second grade through algebra I. The problems are sorted by grade level and topic. Students can also log in to MathScore to do work and to receive instant feedback. Developed by Accurate Learning Systems Corporation, Math Score delivers a high volume of randomly generated math problems and step-by-step solutions in a short period of time. The software can adapt the difficulty of the math problems to the skill level of each student using a patent-pending algorithm. This makes MathScore suitable not only for remedial students but also for students who are ready to advance beyond grade level. MathScore costs US$15 per student per year for the first 100 students. The price drops to $10 for each additional student. A site license for 450 or more students is $5,000 per year.

Go to www.mathscore.com.

Investigate cultures

Give students an insider's perspective on daily life, history, customs and lifestyles from around the world with CultureGrams Online Database, from ProQuest-CSA LLC. CultureGrams Kids Edition offers, reliable and up-to-date country reports on the cultures of more than 70 countries, including Afghanistan, Bolivia, Dominican Republic, Ecuador, El Salvador, Iraq, Mozambique, Panama, Poland and the Ukraine. Each report includes images, a historical timeline, fun facts and sections on history, population, "life as a kid" and more. CultureGrams World Edition, suitable for junior high and high school students, includes cultural reports for 190 countries and territories. Each report includes information on the land and climate, history, personal appearance, greetings, gestures, family, diet, holidays, economy, education, health, and events and trends. Using CultureGrams on an interactive whiteboard, teachers can browse through countries using clickable maps, access country information through common categories, create and show country and culture slides, and compare statistics on the fly. A subscription to CultureGrams starts at US$875 for schools and libraries serving less than 2,500 people.

Go to www.proquestk12.com.

Online Library

Web resources for the interactive educator

Cross-Curricular

FunBrain

www.funbrain.com

Target skills in specific subject areas, such as grammar or math, with games from the Flash Arcade section of this site. Or let upper elementary students dip into the Web Books and Comics area for quirky fun reads.

Elementary

Geography

Education Place – GeoNet

http://eduplace.com/geonet

Play a geography game. GeoNet is a game designed to help children think in geographical terms and build a global context for the information they learn. The quiz questions are organized according to the National Geographic Standards.

Elementary

History

Breaking Down The Walls

http://library.thinkquest.org/CR0212302/index.html

Have fun exploring and learning about different cultures with this award winning website designed by fourth- and fifth-grade students.

Elementary

Language Arts

Cyberguides

www.sdcoe.k12.ca.us/score/cyberguide.html

Discover Web-delivered guides centered on core works of literature with Cyberguides. Each guide contains activities, teacher-selected websites and a rubric, all based on California language arts content standards.

Elementary/secondary

Shakespeare Online

www.shakespeare-online.com

Test your students' knowledge of the Bard and all things Shakespearean on this site. The site offers plot synopses, character analysis, vocabulary help, exploration of Elizabethan life and more. Secondary students and educators that teach Shakespeare will find this a welcome addition to their resource list.

Secondary

Shel Silverstein.Com

www.shelsilverstein.com

Tantalize your poetic side with the Shel Silverstein website, where you can easily lead your class in the art of crafting poems using your SMART Board interactive whiteboard. Download the classroom poetry kit, and use this great poet's work to guide your students on a poetic journey. Fresh and fanciful, this site is filled with joyful music and Silverstein's iconic line drawings.

Elementary

Math

BasketMath Interactive

www.scienceacademy.com/BI

Visit this uncomplicated website to find over 20 math topics to explore with your students. Each topic consists of interactive questions for students to answer. Overall results are tabulated at the end of each session.

Elementary/secondary

Cyberchase

http://pbskids.org/cyberchase

Teach students that math is everywhere when you visit the Cyberchase website. You'll find Web games, lesson plans and activity kits, all packed with visual cues, funky music, skill tests and lots of positive reinforcement. Resources are based on standards from the National Council of Teachers of Mathematics.

Elementary

Science

Science Made Simple

www.sciencemadesimple.com

Get great lesson ideas for your science classes from this site. A resource for both elementary teachers and students, it's full of experiments, science project ideas and answers to common questions like "why is the sky blue?" and "why do stars shine?"

Elementary

San Diego Zoo Kid Territory

www.sandiegozoo.org/kids

Discover the world-renowned San Diego Zoo. Students can hit various links to meet the critters, find science projects, try new recipes and create zany craft ideas using this sunny site.

Elementary

Social Studies

The Learning Network

www.nytimes.com/learning

Investigate the daily news with this resource from the *New York Times*, a trusted source for national and international information and current events. The site offers grade-appropriate analysis of news, timely articles broken out by subject areas, daily news quizzes and lesson plans.

Elementary/secondary

by Heather Ellwood

New Content from SMART

Over 6,600 learning objects ready to be incorporated into lessons

SMART product owners have access to thousands of dynamic leaning objects from Notebook software's Gallery.

Corryann Thompson can't imagine teaching without the Gallery content in Notebook software. This fifth-grade science teacher in Highland Village, Texas, says it's a resource she relies on daily.

With the recent service pack 5 upgrade to this software, which includes new and updated content created with input from professionals like Thompson, the software developers at SMART Technologies Inc. are positive that she'll find the Gallery an even more valuable teaching resource.

What is the Gallery?

The Gallery is an intuitive feature that gives teachers access to images, videos, audio files and Adobe Flash interactivities. The Gallery's main content folder, SMART Essentials for Educators, amasses content, specifically educational learning objects, and organizes this content in an easy-to-reference set of folders. Separate folders exist for each major curriculum area, and subfolders within each subject are all searchable by keyword.

The My Content folder (another main folder in the Gallery) acts as a storehouse for an individual teacher's images, videos and other teaching content. The direct link from the Gallery to Online Resources enables teachers to access SMART lesson activities and other resources available on SMART's education solutions website.

Joe Scrivens, an instructional resource developer at SMART, says the Gallery is a creative tool or platform that teachers can personalize to suit their needs.

"A teacher can create his or her own hierarchy of content using the My Content folder. The way the content can be arranged or organized is flexible and can be fine-tuned to that particular teacher's style," explains Scrivens.

What's new?

With the service pack 5 update, 6,660 resources are now available in the Essentials for Educators folder, says Samantha Paterson, a senior education marketing specialist at SMART.

For starters, 100 new images have been added, including some from the Bridgeman Art Library, which houses images of famous works of art, ancient buildings and artifacts. And educators can now find 40 new high-quality photographs from iStock photo, which include a variety of facial expressions and a selection of famous, historic places that will add visual interest to any lesson. New videos from Digital Video Library are also available.

With the upgrade, teachers can also find even more Flash content from Daydream Education and Intel Skoool technology, all created to help students learn with animated activities. Geography and science teachers can take advantage of the images of comets, galaxies, nebulas and physics simulations from NASA.

What does this mean for teachers?

Paterson says all of these additions make the Gallery an even more practical resource for classroom teachers.

"Teachers appreciate how easily they can create personalized and customized lessons with the learning objects in the Gallery," explains Paterson.

Scrivens agrees. "Because teachers can access thousands of images, sounds, videos and interactive Flash files with the touch of a finger, they can integrate this content into their lessons on the fly," he says, "allowing them to flesh out and take advantage of those spontaneous teachable moments that seem to happen in most classrooms."

Thompson says this new content will certainly be a boon to her science classes. She often pulls images from the Gallery that relate to her unit of study and links them to words her students need to master. When she or a student highlights or clicks a word on the SMART Board interactive whiteboard, the definition and the linked image pops up. That way, she explains, her students understand the meaning of the word in a visual way.

With this upgrade to the content in the Essentials for Educators folder, Thompson and many other educators will have a whole lot more choice. That can only mean more great teaching and enhanced learning in many classrooms.

Customers can download the new service pack at www.smarttech.com/support/software.

Win an AirLiner wireless slate!

Congratulations

to last issue's contest winners. Each winner will receive an AirLiner wireless slate for explaining how they use technology to help students become more globally competitive.

Sharon Conley
Woodstown Middle School

Nathaniel Wilson
John Evans Middle School

Dale Rainey
Heritage Academy

Loriann Lahl
Tri-Valley Elementary School

Allen Thomas
JFK Middle School

All you have to do is tell us about your most successful strategy for delivering technology-focused professional development.

Send your response, along with your name and contact information, to ieeditor@smarttech.com by July 30, 2007. One entry per person please.

Five lucky winners will receive their very own AirLiner™ wireless slate.

About the AirLiner wireless slate

Interact wirelessly with your SMART Board™ interactive whiteboard or Sympodium™ interactive pen display from 52 feet (16 m) away. The battery-free tethered pen lets you control any software application, write notes and highlight information in digital ink.

For more information, visit **www.smarttech.com/airliner**.

EDUCATION BY THE NUMBERS

by Wendy McMahon

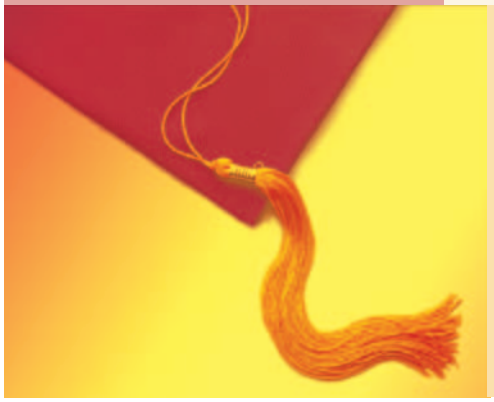
Percentage of U.S. students who plan to continue their education after high school: **94**

Percentage of U.S. students who think going to college is critical: **88**

Percentage of U.S. students who are interested in pursuing a career in technology: **49**

U.S. 15-year-olds ranked **24th out of 29 countries** on the 2003 Programme for International Student Assessment (PISA) math exam

U.S. 15-year-olds scored an average of **491** on the PISA science literacy exam, **below the overall average of 500**



Percentage of human resources officials surveyed who cited deficiencies among incoming high school graduates in professionalism, punctuality, working productively with others, and time and workload management: **70**

National Center for Education Statistics; "The 2002 National Assessment of Academic Progress"; "2003 Programme for International Student Assessment (PISA)"; The Conference Board, Corporate Voices for Working Families, Partnership for 21st Century Skills and Society for Human Resource Management "Are They Really Ready to Work?: Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century Workforce."

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