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James Mero, page 58

**“While the number of charter schools has increased annually, it has been a function of politics: passing charter laws in new states and establishing technical assistance centers to harvest the pent-up demand of pioneers to start independent public schools.”**

Marc Dean Millot, page 24

**“Information fluency gets at the fact that what matters is at least as much production as consumption, using and doing as well as finding.”**

George Otte, page 40



“Education must make a **diligent effort to understand** this social networking phenomenon, align itself with it and **shape it further.**”

Mark Gura, page 33

“With our **wireless environment** and the laptops we have available, the [thin client solution] has created an **incredibly flexible learning environment** in our schools.”

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award winner!


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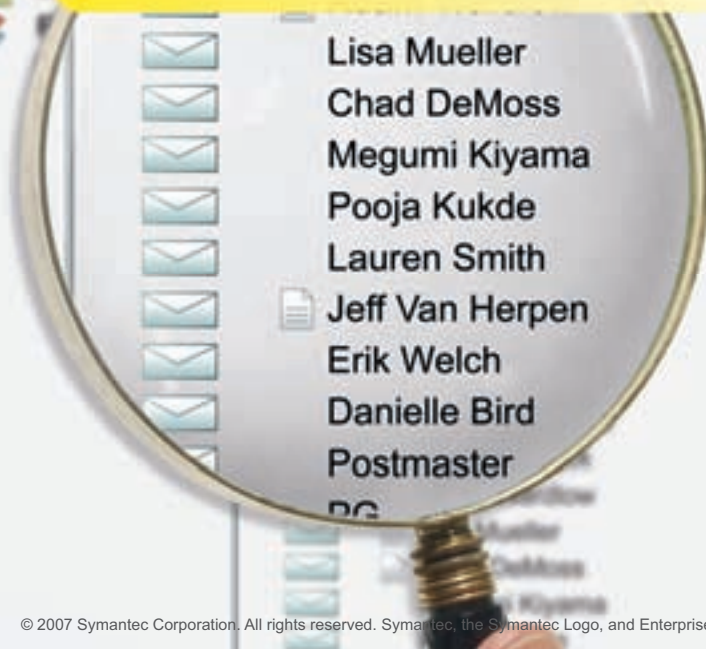


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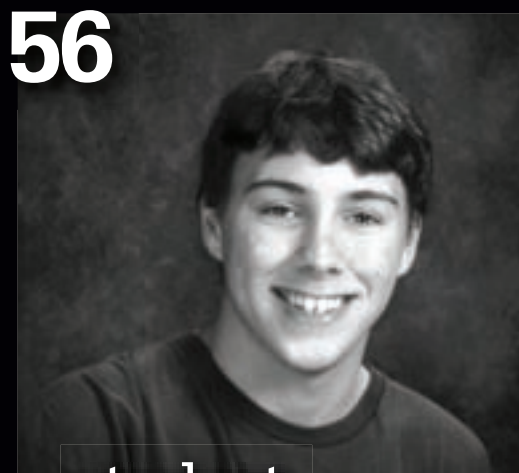
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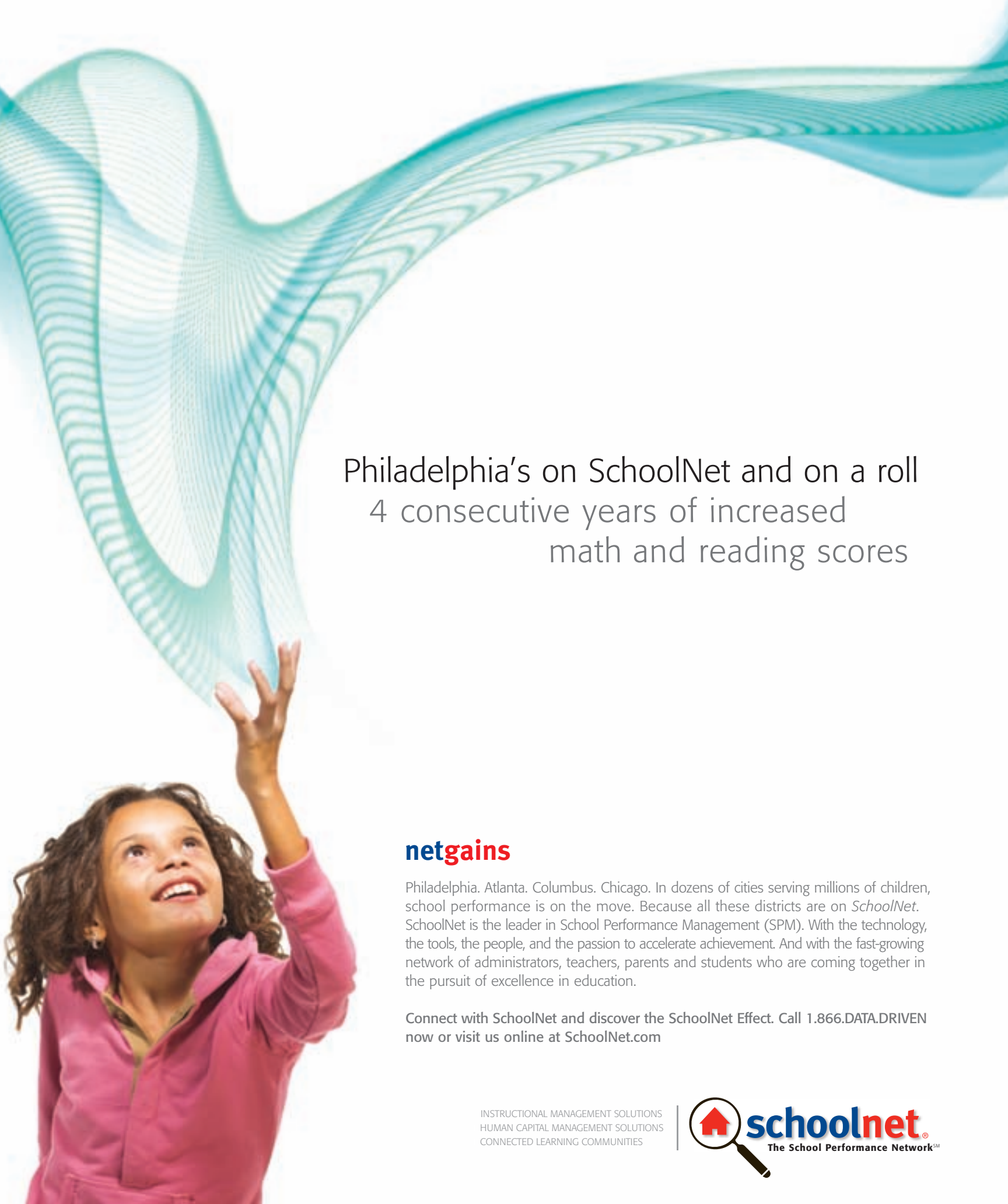
By Bernard Percy



## student futurist

James Mero envisions a fingerprint-operated future for education. Discover what else he predicts for tomorrow's students.





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Dr. Mary Kay Bacallao is an associate professor at Mercer University where she teaches The Construction of Scientific and Mathematical Thinking for teachers. She has designed a game for arithmetic called "Equals" and a geometry puzzle, "Quadrilateral Pieces."



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Mark Gura has been an educator for more than three decades. The former director of instructional technology for the New York City public school system, he currently works with Fordham University's Regional Educational Technology Center.



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### Marc Dean Millot

Marc Dean Millot edits *School Improvement Industry Week* and *K-12Leads & Youth Service Markets Report*. He has held senior positions at RAND, New American Schools Development Corporation, its Education Entrepreneurs Fund, and the National Charter School Alliance. Millot's daily blog, [edbizbuzz.com](http://edbizbuzz.com), is on [edweek.org](http://edweek.org).



### Bernard Percy

Bernard Percy is a noted educator and communicator; from 1998 to 2003 he was co-founder and editor in chief of *Converge* magazine. Percy is the author of several books on education.



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## Emphasize a Network Convergence Strategy in Your Technology Plan Revisions

Network convergence is no longer a grand theory best suited for academic discussions. Convergence is a reality for IT leaders in education, government and the private sector to reduce total cost of ownership and improve business process communications by consolidating common network devices and protocols.

Network convergence typically refers to the process of taking networks that have traditionally operated separately – such as data, traditional voice, e-mail, video and physical security – and “converging” them into a single Internet Protocol (IP) network to support IP devices, such as phones, computers and cameras.

The good news here is the technology has finally caught up with the vision. IP telephony – Voice Over IP (VoIP) – no longer sounds like talking with a couple of soup cans and a string. The quality of the VoIP transmission now rivals traditional analog services. In addition, the digital signal traveling on the IP network can now be used in applications to enhance the flow of

information through the organization. Voice commands for enterprise applications, text-to-voice and voice-to-text messaging all extend access and interface with the Local Area Network or Wide Area Network.

The same is true for IP camera technology. Just as the digitizing of voice opens multiple opportunities for the use of voice in network applications, digital video signals can also be used in applications like surveillance analytics to capture and identify events using video such as loitering and objects left behind.

Network convergence allows for these previously stand-alone systems to begin interacting. Alarm systems can integrate with voice and e-mail notification and IP video surveillance systems.

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*Verizon Business is proud to be the exclusive national sponsor of the 2007 Digital School Board Survey, and we commend school boards and their districts who are applying information technology to improve the delivery of services and quality of education to public schools and to better engage their local communities and constituents.*

**Carlton Baker,**  
National Manager, Verizon Business E-Rate Programs

## Don't Dream It, Be It

**I** LIKE TO ASK PEOPLE what they imagine schools will look like in the future. It's a fun question and I have heard all kinds of responses to it. I have also had the pleasure of reading grants and essays about new models for American education from the physical school building to the mode of instruction. In spite of the wide variety of responses I have heard, there is always one common denominator to the question: technology.

Information technology is always part of the answer, from global collaboration and online learning to software that is so intuitive that it makes adjustments and plans for the needs of every learner.

When it comes to the actual school facility, people share ideas about schools without walls and multi-use facilities. In fact, you may already know about wonderful schools being built as hubs of the community with community technology centers.

What I thought about as we worked on this issue is that whenever I ask this question I hear very few responses that aren't currently possible. So the next question I am asking is: Why aren't we building the schools of the future right now? What is holding us back? Cathilea and I will be busy this fall visiting different schools around the country. We're interested in creating the future today. Let us know how we can help.



**Marina Leight**  
Vice President  
Center for Digital Education



**I** HAVE THE GOOD FORTUNE of working with both state and local government and education officials. We recently hosted our annual Digital Education Achievement Awards and Digital Government Achievement Awards dinner in Las Vegas. This is a unique opportunity to bring together the most innovative doers and dreamers from K-12 districts, universities, cities, counties and states from around the country. All participants mingle together in working groups throughout the day and celebrate together at the fun-filled awards dinner.

I love this event. This is one of the few times when government and education come together around achievement and innovation, and the conversations are fascinating. There are no apparent barriers here. There are no jurisdictional lines drawn in the sand. There are no bureaucratic justifications for why something can't be done.

There were stimulating conversations about social networking and its impact on our society. There were practical discussions about security, broadband potential and multimedia applications. And there were lively exchanges about the future of our institutions in this rapidly changing world where the Information Age is transitioning to the Imagination Age.

Cards and collaborative ideas were exchanged and as the night came to a close, Marina and I congratulated our guests once again and bid them another good year. This is the future of education, where the lines are blurring and our officials come together with a common purpose to truly make our educational system the best possible. Here's to a great year of innovation!



**Cathilea Robinett**  
Executive Vice President  
Center for Digital Government  
Center for Digital Education

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# The Leading Ladies of West Virginia

BY MARINA LEIGHT AND  
CATHILEA ROBINETT

This past June, we had the pleasure of meeting West Virginia first lady Gayle Manchin and Joanne Tomblin, president for Southern West Virginia Community and Technical College. They spoke at the Center for Digital Education's and the Council of State Government's education technology summit. They were spectacular! Their individual work is impressive and together they are creating a bright future for their state. We immediately dubbed them "The Dynamic Duo" and we're proud to share their work with you in the following pages. Their creativity and commitment is making a difference every day.

# A Dynamic Duo

PHOTOS BY STEVE ROTTSCH



**Gayle Manchin**, first lady of West Virginia (left), and **Joanne Tomblin**, president of Southern West Virginia Community and Technical College

**Q: You have both done an amazing amount of work with higher education in your state. Please discuss community colleges and the results of your partnerships with them and each other.**

**First Lady Gayle Manchin:** Joanne Tomblin is president of Southern West Virginia Community and Technical College and it is critical in West Virginia that we make sure students have access to the skills that they are going to need for the jobs that are going to be available in the state. When you get into southern West Virginia – a very rural, isolated area – it’s critical that schools provide access, opportunity and a clear pathway of what they need to accomplish, where they can go, and how they can build on that degree. In addition, they have built and are getting ready to open very soon a large technology center, which will be wonderful for their students. You have to have a clear line of communication between education and economic development. What jobs are forthcoming, what skill sets are needed, and how can higher education provide the curriculum necessary for these students to be successful? Joanne Tomblin has been in the forefront in terms of being innovative and making sure that her administrators and her faculty understand the importance of addressing those issues as they arise.

**Joanne Tomblin:** My connection with Gayle Manchin is through the Education Alliance; we both serve on that board. But keep in mind that her husband being the governor and my husband being the lieutenant governor and president of the West Virginia Senate, we do cross each other’s paths on many occasions for many different events. There’s a lot of interchange between us, but not necessarily always related to business.

**Q: What has inspired you, both in your educational paths and your careers?**

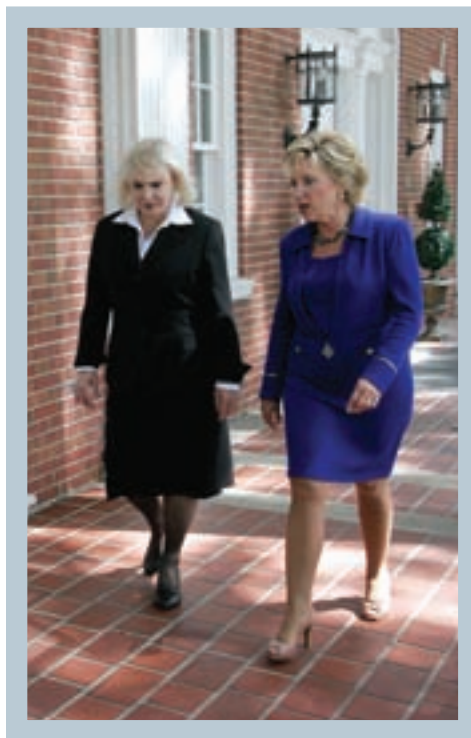
**GM:** My original [education] background was in language arts. My master’s was in reading. At the time I started to pursue this

**“I don’t represent the Department of Education. I’m not a rubber stamp for programs or initiatives.”** **Gayle Manchin**, first lady of West Virginia

[master’s degree in educational technology leadership] I was on the faculty at Fairmont State University. I knew that as we looked forward, change in education was going to involve technology, and it was going to require vision. I had a unique opportunity to become a part of a graduate cohort in an educational technology leadership program. I felt that for my own knowledge, to

that is going to help you achieve what you need to achieve, whether it’s in school, in business or at home. That understanding of what technology can provide, not just as a piece of hardware, but how it enhances our ability to grow and develop is critical.

**JT:** First, I’ll tell you that I’m not a native of West Virginia. I came here from Long Island, N.Y., and I came through the college. West Virginia afforded me an excellent educational opportunity and has been wonderful to me throughout my career. I truly want to give back to the state that fostered my career. In my 26 years here at Southern, I have seen amazing things happen to people – seen them fulfill their potential. I have seen individuals from this area overcome social, economic and academic challenges. I have seen the communities we serve flourish and I’m glad to be a part of that success.

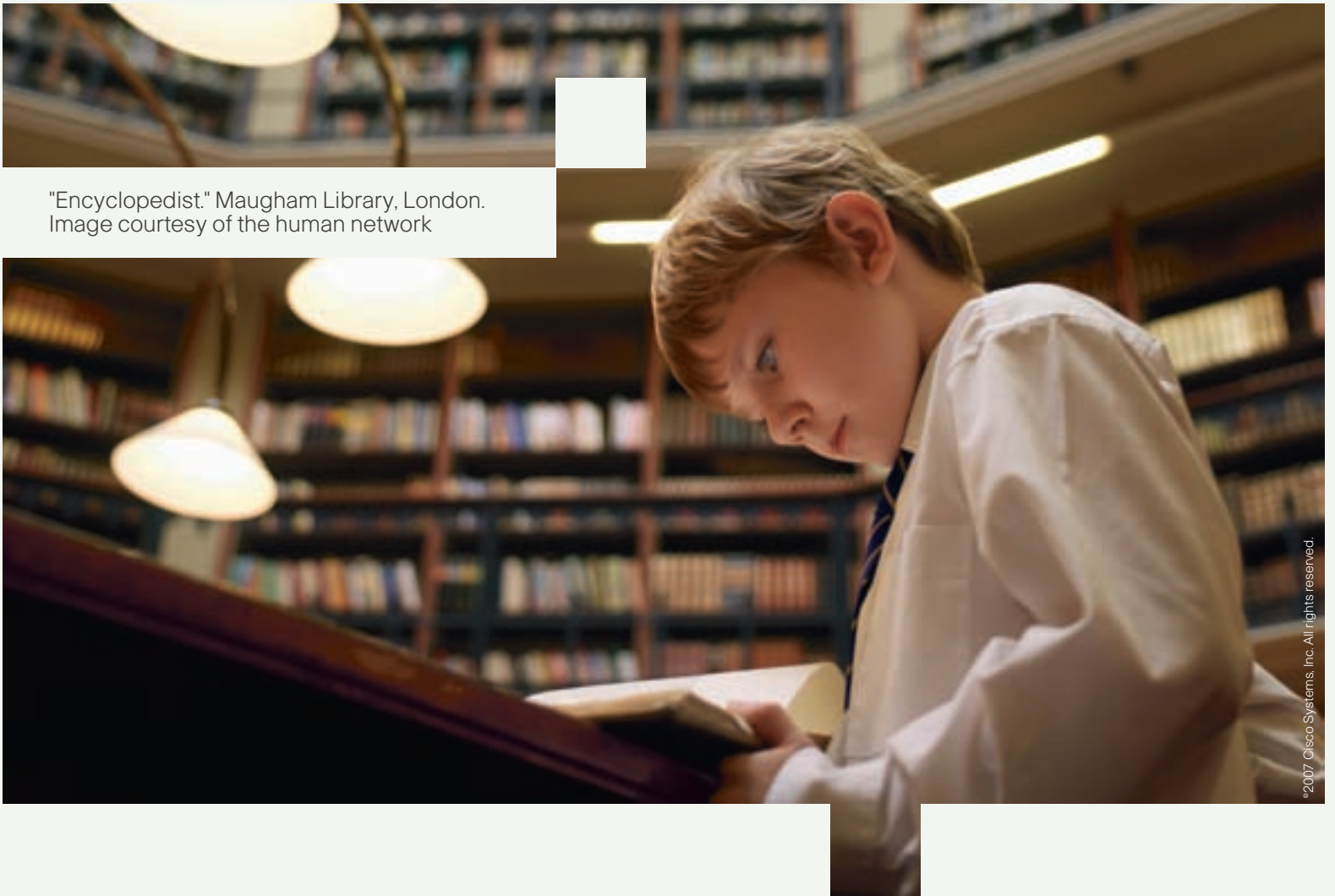


**Q: Gayle, you regularly podcast and discuss innovation in education. We did a quick survey and can’t find another first lady with her own series of podcasts. How long have you been doing this, and where did you get the idea?**

**GM:** I have found the podcasts to be very exciting. I got onto the whole concept of educational podcasts through Nancy Sturm [education technology advisor to West Virginia Gov. Joe Manchin]. My children and grandchildren had been using iPods for a long time but it was all about music. I was really excited to get turned on to the possibility of using it for education and the potential of having these wonderful conversations with people that have great vision and expertise in their fields. Some of the people I have found so exciting are Bernajean Porter, who is very innovative in the art of digital storytelling, and Ian Jukes,

broaden my mind and perspective, that this would be an ideal course for me to take. The irony of the whole situation is that I did that in the mid-90s, and everything that I learned is now obsolete. It pushed me to continue to try to stay abreast of what is happening and to understand that being on the cutting edge of technology does not mean simply being able to access a program on the Internet. Having a vision for technology is seeing the potential of technology and also determining the tool





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who has done much research into technology program evaluations. Another aspect of the podcast is the opportunity to interview students. Hopefully I will soon be doing one with a teacher. The idea is not only getting the big picture, but also bringing it back to those individuals who are in the trenches doing it every day – their perspective, their perception and their vision for schools in the future.

**Q: As the first lady of West Virginia you are in a very unique position to work on technology and education, which seem to be initiatives that you are very passionate about. I'm curious about the Governor's Advisory Council on Education Technology. Were you a member of that council?**

**GM:** Yes, I served as designated by my husband on that council. The original plan had been to bring in all arms of state government into an advisory council, including education. We were looking at how to be able to better communicate with each other and how to use technology more effectively. The Governor's Advisory Council on Education Technology folded into the P-20

**“Students learn from the Internet, not always from a book anymore. That makes us have to change what we do in the classroom.”** Joanne Tomblin, president of Southern West Virginia Community and Technical College

Jobs Cabinet, which initiated the idea of building a statewide [Web] portal, which would create the infrastructure that's needed to connect all of the different agencies in a constructive, user-friendly atmosphere. We are now moving forward very quickly with the concept of the state portal, making sure that we have the infrastructure across West Virginia to support the ability of every citizen to be able to access the state portal for business or educational usage.



**Q: How else are you trying to connect education and economic development in the state?**

**GM:** The governor said from the first day of his administration that never again would there be a conversation around education that economic development was not at the table; neither would there be a meeting of economic development that education was not at the table. It's a two-pronged approach. First, we have to provide a seamless education system, which begins in early childhood. Then as you look at postsecondary education, there has to be a seamless connection that allows students

we have the curriculum that will create the future employees for those companies. We are trying to promote in and outside of this state that we are “open for business,” a phrase [my husband] Joe has used many times during his administration. We want to be user-friendly, not only to the industry that comes into West Virginia or the existing businesses that we want to support, but also to our citizens, that we make the access to education as easy and effective and efficient as possible.

When Joe appointed me to the state school board, I took that responsibility very seriously. I believed with that appointment, I could create an open line of communication between the state board and the governor's office. By serving on that board, I represent the students, teachers, parents and the community all across West Virginia. I'm their voice on the state board. I don't represent the Department of Education. I'm not a rubber stamp for programs or initiatives. Board members must be the balance between what is essential for the Department of Education to create success for the children of West Virginia.

**JT:** I see higher education and economic development fitting like a hand and glove. What is still an issue that needs to come to the forefront in West Virginia is the critical importance of community colleges to economic growth in the state. We're looking for skilled training and skilled workers and they are going to come out of the community and technical college system. We're the trainers for entry-level workers.

to enter the pipeline, exit the pipeline for work, re-enter the pipeline, and we need to make that as accessible as possible. On the economic development side, we have to keep communication open when industry comes into West Virginia, when existing businesses want to expand, or when technology entities come into our state. We must be informed to the skill sets that are needed, to the types of employees that they are looking for and then make sure that

We also have a lot of adults who have, for one reason or another, lost jobs and need to be retrained. We have a large group of people who need to learn new skills for the 21st century. That is how we're going to get economic development started in the state, to educate people and provide them with training that is needed for the jobs that are available in the state right now. Community colleges are going to be the important entity to provide that training.

**Q: Please talk about your work with the Education Alliance.**

**JT:** I've been involved with the Education Alliance for several years. In today's world, there is no entity that can work in isolation and the Education Alliance brings education, government and business together to focus on what we can all do to further our educational system. It provided grant opportunities for teachers to enhance their classroom experience for students. Most recently, they are championing Gov. Manchin's SEEDS program, which stands for Student Educational and Economic Development Success. We'll bring educators and business together to work to eliminate challenges in our K-12 system to better prepare students for the future. It is critical to the future of this state and our nation that we bring all these forces together. As I said, we can't work in isolation; we have to work cooperatively to get the job completed. I believe the Education Alliance is a great catalyst for this process.

**Q: The Partnership for 21st Century Skills defines 21st century skills as collaboration and communication skills, as well as the ability to not just know, but be able to do. How do you imagine these skills coming to fruition for the students in your state?**

**GM:** The Partnership for 21st Century Skills is an initiative that was endorsed by the governor and the state superintendent and redefines education in terms of its content standards and what the goals are for students in terms of 21st century thinking

skills and strategies. So while a part of the overall state portal I discussed with the P-20 Jobs Cabinet will include online classes and distance learning exemplifying the 21st century partnership, it is specifically a K-12 education initiative.

**JT:** The governor and the first lady have the right idea – the world is different today. We cannot live in our own separate territory. We have to integrate and we have to collaborate. The governor and first lady are well aware of this and are trying to get the right people together at the table. Because we live in such a global world and a global society, we have to break some of the barriers down in order to be successful and produce the structure we need.

**Q: Our theme in this issue of Converge is "new school models." What would your vision for a new school model include?**

**GM:** I can't tell you the bricks and mortar part other than that I envision an area that is very open, that has lots of spaces where groups of students could work together. They would be facilitated by teachers who empower them to create and to be innovative. The school of the future is not necessarily loaded down with a tremendous amount of hardware, but it is wired. The hardware is going to change so rapidly that you could invest a fortune today and six months from



## The Center for Allied Health and Technology

The new Center for Allied Health and Technology at Southern West Virginia Community and Technical College is being made possible through higher education bonds and the Vision 2020 Major Gifts Campaign. It will feature 55,000 square feet of state-of-the-art health and technology equipment.

now there's something better. You should build a school that has the potential to deal with whatever technology provides us in the future; one that provides enough of the tools that allows students to go anywhere in the world to intersect with people and programs. Schools eventually should be open 24/7. The school truly should be the hub of the community, but in a much greater way than it was in the 19th and 20th centuries.

**JT:** The model of the future is certainly going to have technology throughout. I think we have a model already off the ground that we are involved in here at Southern. We are engaged in what I think is a model that is unique to the nation. We have a wing attached to a comprehensive high school in one of our most rural counties. This particular county has the lowest college-going rate in the state. We attached a wing to the comprehensive high school to allow students in the high school as well as the community to be engaged in higher education during the school day, after the school day, to be able to take dual-credit classes, to be able to take college classes, to allow the community to come in and use our space, to actually have a health care facility there. What it all boils down to is having the technology in the program at the school so students who graduate from high school can also receive their associate degree from this community college. This is the model of the future. We also have a campus that is attached to one of our vocational schools in another rural county that we service. We share programs and services with the vocational school, teachers, space and all of those kinds of things. We've been

Continued on page 55

“Different does  
not equal useful.  
Innovation is only  
useful if it solves  
a problem.”

— CHRISTOPHER C. AYCOCK





# Charter Schools:

## An Idea in Adolescence

**In 2008**, the charter school idea will be 17 years old. The invention is no longer just a newfangled notion. So what can be said about this oft misunderstood innovation in public education? Has it proved useful? Does it have a future?

Answering these questions requires some appreciation of the necessities that mothered this invention of public education, the charter movement's development and the extent to which charter schools are solving the problem they were created to address.

### **An Unusual Birth**

The charter school owes its birth to a diverse and often contradictory set of political interests. During the early 1990s, dissatisfaction with the academic performance of traditional public schools extended to state legislatures, governors, the business community and the general public, as well as vocal groups of parents and even public school educators. The voucher movement was growing in strength. Moderate Republicans who did not embrace vouchers wanted to introduce competition into the system. Moderate Democrats were captivated by the idea of "reinventing government." School boards and teachers unions understood the political necessity to accept some modifications to the structure and governance of public education.

BY MARC DEAN MILLOT | ILLUSTRATION BY TOM McKEITH

State legislators advocating on behalf of these groups, and the great number in the middle who sought only to do the right thing, agreed on one point: The centralized, bureaucratic, one-size-fits-all structure of local education agencies neglected too many students outside the perceived norm, and stifled the efforts of school leaders trying to serve those students effectively.

Two legislative innovations followed from this consensus:

- The authorization of legally binding agreements allowing private groups to run public schools in return for accountability for student performance.
- The decision to grant agencies other than school districts the right to establish public schools by authorizing these agreements.

State laws enabling systems of independent public schools remain the fundamental invention of the charter movement. Before charter legislation, individual public schools had no legal standing in state law — all were simply administrative units of school districts, and only school boards had the power to authorize public schools. A particularly effective and savvy principal, backed by an especially impassioned and influential group of parents, might carve an autonomous “island of excellence” out of their district’s bureaucratic structure, but the instability of such arrangements becomes clear when principals are replaced, the children of activist parents graduate, elections change the school board or some event shakes the school or district. More importantly — and by definition — students neglected by their school district do not have ready access to even this kind of arrangement. Charter laws created a pathway to meet their needs.

Agreement in state legislatures on the need for charter schools to serve neglected students still left quite a few important details of charter school law up in the air. Additionally, while school boards and unions accepted the political inevitability of charter legislation, they also sought to minimize its potential impact on the traditional system. Charter advocates fought these limitations.

The content of various provisions describing these details reflects the balance of power



in the state legislatures when each law was passed. As noted earlier, authentic legislation permits agencies other than school boards to authorize charter schools. But every charter law also has provisions that constrain the concept. The basic right to hold a charter is generally confined to nonprofits, marginalizing most of the private sector and limiting access to private capital. Most laws cap the number of charter schools by jurisdiction, authorizing agency or across the state — reducing competition. Most also manipulate charter school funding formulae so that the

credible became the movement’s de facto leaders. After legislation passed, the movement’s success depended on the formation of effective charter schools.

Even as charter founders faced educational challenges in every state, the long pent-up demand among activist teachers and administrators to start independent public schools assured an ample capacity. The movement’s crucial shortfalls were in the basics of business operations, areas like logistics, finance, purchasing, real estate and insurance; and in the application of education law, including special needs, student privacy and civil rights. For this gap to be closed, the movement needed support from state and national leaders.

Unfortunately, the movement lacked leadership as we understand the term in a democratic society. Few of the people viewed as leaders were elected by charter holders. Nor in most states was there a leadership in the sense of individuals or organizations meeting the pressing needs of charter schools for group purchasing, legal advice, facilities financing and special education.

Charter founders, so interested in escaping the central control of school districts but lack-

## Charter schools must be good enough to make a difference for the students not served well by traditional arrangements.

average per-pupil payment tends to be materially less than what school districts receive from all sources of government funding.

### A Problematic Childhood

No useful innovation stands on its own, apart from society. The invention of the pizza cutter didn’t count for much without the pizza. Charter schools are no different.

The charter movement began as a political struggle to pass legislation favorable to independent public schools. Naturally people whose policy, advocacy, campaign skills and access to foundation funding made them

ing the expertise required to effectively engage the local economy and focused on problems at their own individual schools, were very slow to organize themselves into associations. Government does not offer the movement access to capital finance. Only foundations could put the resources together.

### Where’s the Innovation?

The consequences of the charter movement’s birth and childhood should not be surprising. Today, a reasonably well-compensated cadre of political activists carries on the political battle for the charter idea. But

on the ground, lacking access to a support network that might afford economies of scale, individual charter schools struggle to overcome the hurdles of inadequate investment capital, lower per-pupil payments than their district counterparts, a dearth of suitable facilities at an affordable price and a shortage of business expertise.

In every state, there are a handful of charismatic founders able to attract substantial political and foundation support, and media attention. The accomplishments of these schools, their communities and founders are real and worthy of praise, but traditional public education creates “islands of excellence” with roughly the same frequency. Overall, the failure of the movement to shift from political action to operational development led to a generation of small schools on the ragged edge of financial sustainability, and inconsistent academic results. The successes of the movement’s childhood amount to the victory of survival more than anything else.

After important legislative inventions of the legally independent school established by contract and the alternative chartering agency, there is very little innovation attributable directly the charter school concept itself.

*The Community School* – One “reinvention” that owes its existence to the charter idea is the community school – like the little red schoolhouse of old, a community school is not only for a specific group, but of that group. Many charter schools, focused on serving a geographic community, draw their leadership and staff from that neighborhood and are overseen by a board of directors from the area. In school systems serving large counties or huge urban populations from a bureaucratized central office, that should qualify as an innovation.

*The Chartering Agency* – The idea of agencies other than school boards with the power to establish public schools holds a potential for innovation that remains largely unrealized. A paper from the Progressive Policy Institute, “*Alternative Charter School Authorizers*,” by Louann Bierlein Palmer, shows that by 2006, 14 states gave chartering authority to 90 alternative agencies. Stripped bare of every traditional school district function but the rights to authorize and close public schools,

## Whatever its impact on academic performance, the charter school idea has changed the political landscape of public education.

the new chartering agencies could become the portfolio manager envisioned under the public school contracting model advocated by University of Washington professor Paul Hill and others. Such an agency would assess emerging and unmet educational needs, identify and enter into agreements with appropriate school managers, and cull poor performers.

In fact, “chartering” has been about political process more than objective criteria, a reaction to the hostility of school districts to independent public school alternatives more than a serious review of the ability of applicants to operate a school. During the negotiations leading up to passage of state charter laws, the new chartering agencies were selected less for their capacity to oversee a system of public schools than their willingness to grant charters. With a staff of one or two, their early operation was more a matter of keeping the worst applicants out than making sure that only the best got in. Even today, these agencies lack the capacity to do much more than process school applications, get completed proposals to chartering decision-makers and facilitate termination of the most egregious failures.

*Curriculum, Instruction and Pedagogy* – It is difficult to make the case that charter schools are responsible for educational innovations per se. Experiential learning, progressivism, constructivism, back to basics, phonics, whole language, old math, new math, intensive use of education technology, service learning, team teaching, Montessori schools, open schools, effective schools, accelerated schools and so on were developed long before charter schools and have been adopted by countless schools operated by districts.

The educational utility of charter schools rests on an expectation of superior academic performance – especially for the students whose needs are not being met by the traditional system. With like-minded teachers, parents, students and school boards, charter schools should be able to align themselves for achievement better than a traditional public school with none of these advantages.

Free of outside interference, charter schools are better positioned to implement educational programs with fidelity. Yet they are no less likely to modify a model than any district. The change may well reflect the school’s desires, rather than those of the central office, but they can have a similarly debilitating effect on the quality of implementation, with commensurate effects on student outcomes.

The charter idea is not exactly an innovation in teaching and learning. It is a systemic innovation intended to foster what would be an educational innovation: a system of public schools that consistently meets the needs of all students to achieve high levels of academic performance. To have this effect the charter movement must achieve both quality and scale.

*Quality* – Wherever charter schools exist, parents with children in those schools will

### By the Numbers

State	Number of Charter Schools
California	574
Arizona	499
Florida	338
Minnesota	131
Utah	58
Louisiana	57

Source: U.S. Charter Schools <[www.uscharterschools.org](http://www.uscharterschools.org)>

tell you their needs are being met in ways the local district would never contemplate. At most charter schools, one look at enrollment will show long waiting lists. Observers will tell you the charter schools have had a competitive influence on the district.

The academic performance of charter schools is the subject of intense debate. Advocates cite studies and perform evaluations suggesting charters are marginally superior to traditional public schools. Opponents cite studies and perform evaluations that suggest the opposite. One observation about this debate was drawn by the Charter School Achievement Consensus Panel, formed to address the politicization of charter evaluations, in its 2006 report *Key Issues in Studying Charter Schools and Achievement: A Review and Suggestions for National Guidelines*:

*Overall, we can make a weak case that the quality of the literature is improving... But more striking is that the literature still seems to be dominated by two roughly equally sized bodies of work that differ substantially in the quality of their research designs. The first approach, which studies individual student's gains in achievement, uses various methods*

**Until the movement is able to align school founders and foundation finance with an operationally oriented leadership representative of most charter schools, charters will remain an idea for the future rather than the present.**

*that in general we judge to be superior to the methods used in the second body of literature, which compares achievement at the school level between charters and other schools... We conclude that the number of studies is still quite small and the quality of research designs is mixed.*

A second reasonable conclusion to be drawn by those without an immediate stake in the discussion is that, after 17 years, the charter idea has not resulted in a system of public schools consistently producing clearly superior outcomes to those operated by school districts.

*Quantity* – The figure below, from the National Charter School Research Project's recent report, *Quantity Counts: The Growth of Charter School Management*

*Organizations*, co-authored by this writer, tracks the formation of charter schools.

While the number of charter schools has increased annually, it has been a function of politics: passing charter laws in new states and establishing technical assistance centers to harvest the pent-up demand of pioneers to start independent public schools. As noted earlier, these centers did not evolve into the support centers that might have created attractive operating environments for second, third and fourth waves of charter founders.

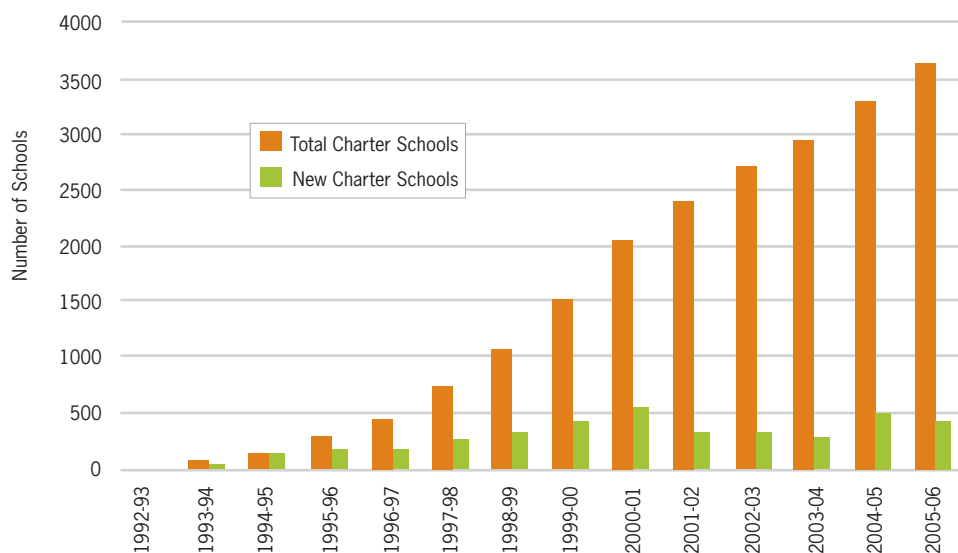
As the movement exhausted the supply of states ready to pass authentic charter laws, it turned back to removing constraints in states with relatively favorable laws. The effort to raise or remove caps, increase per-pupil payments to charter schools, improve access to public school real estate and the like have had limited success. Because of the debatable record of the first wave of schools, the overwhelming attitude of legislators in the middle of the charter school debate has been to wait and see what the charter movement can do with the laws in place.

*Reinventing the School District* – Ironically, the idea that local education agencies managing individual schools from a central office lacked the flexibility to meet the needs of many students has twice served as the vehicle for creating the same kind of system in private form. Even more ironic is the fact that the nonprofit Charter Management Organization (CMO) has become “the new, new thing” for philanthropies supporting charters, long after investors abandoned its for-profit predecessor, the Education Management Organization (EMO).

Is quality assurance best left to the relationship between a charter school and its authorizer, or is there real value added when

## Charter School Growth: New and Total Charter Schools

New charters make for slight increases in totals.

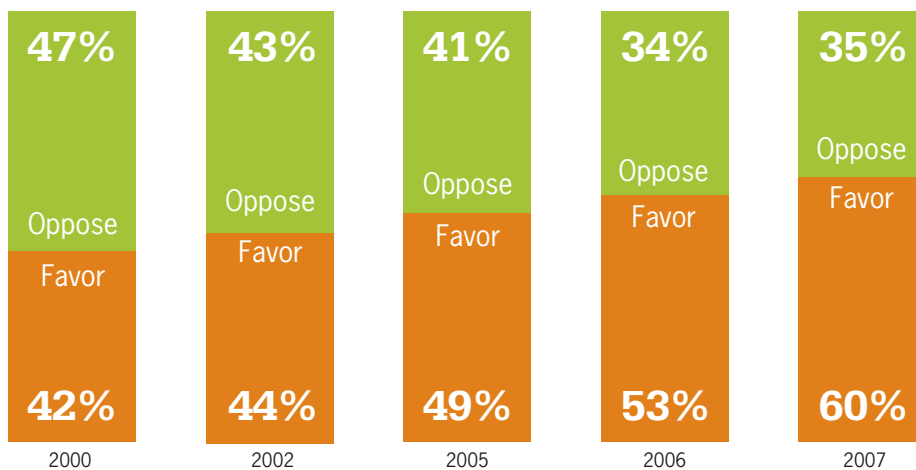




## Americans' Support of Charter Schools

As recorded in the 39th annual PDK/Gallup poll.

Remaining percentile were "don't know" responses.



a central manager is interposed between the two? Is the soul of the movement to be found in schools that are not only formed for the community, but by the community, and organically of that community, or in schools that report to a new central office? Is there a useful middle ground?

*Quantity Counts* summarizes what we know about the CMO strategy so far:

A centralized MO (Management Organization) approach to replicating schools brings its own challenges, many of which can combine to work against consistent quality, such as pressure to “make” business plans by growing quickly. Such pressures have led MOs to undisciplined approaches to deciding with whom and where they would start new schools, as well as to inadequate investment in startup and support infrastructure. These compromises can be costly both in terms of finances and academic results.

Too many MOs have repeated avoidable mistakes. Naïve assumptions about growth goals, design fidelity, politics, and community relations have exacerbated already challenging scale efforts. EMOs and CMOs alike have encountered these problems. Only regionally focused and independently financed for-profit designs have achieved both consistent quality and relatively large scale. It is too early to know the record on academic outcomes and financial sustainability across CMOs of more than 20 schools, but there is certainly little rigorous evidence yet of a large scale CMO (more than 30 schools) with consistently high-quality and stable schools.

*The Politics of Public Education* – Whatever its impact on academic performance, the charter school idea has changed the political landscape of public education. Now that state and local politicians have this option in the mix, they will not let it disappear.

- Before the charter idea, politicians had to choose whether to support vouchers or public education and so alienate one group of voters or another. Charters are a politically viable way to be “for” public education but “against” its dominant form of organization.
- For the public, legislators, mayors and

governors – and even enlightened superintendents and school boards – charter schools provide an alternative means of public education where none existed before. The existence of charter schools creates public education options that alter the ongoing negotiations between school districts and their legislatures, governors and mayors. The end of the district monopoly also changes the nature of collective bargaining between teachers unions and their district’s superintendents and school boards.

- Charter schools are a useful outlet for grassroots dissatisfaction in school districts, even – and maybe especially – for those who oppose expansion of the idea. It may be easier for the traditional system to let some students leave rather than meet their parents’ demands.
- As the figure above shows from the 39th annual PDK/Gallup poll, the *Public’s Attitudes Toward Public Schools*, a healthy majority of Americans now support charter schools.

### Potential (Un)Realized?

*Innovation! One cannot be forever innovating. I want to create classics.*

–Coco Chanel

The legally binding agreement of charter school law captures a principle of “autonomy for accountability” that has attained “clas-

sic” status throughout much of traditional public education. Still, the mere existence of independent public schools is hardly sufficient grounds for educational excellence, and the charter school is far from attaining “classic” status.

What will be the charter movement’s adulthood? There is no reason to believe the charter option will disappear. But will most parents be able to sit down at the kitchen table and consider a local charter school a real alternative to ones operated by their school district? Will that charter school be one formed by the community, operated by a private entity or a nonprofit manager, or all three? Will charters be an alternative available to a few students in a few communities?

The utility of the charter idea lies in its potential rather than its performance. Its potential remains as powerful as the day the first legislation passed 17 years ago, but unrealized. It depends on the academic performance of the charter schools in existence now and others being formed today. If past performance is any guide, the path will be hard and the journey slow. Only when a threshold of quality is reached across most charter schools will state legislation and school districts become more favorable to charter formation.

We come back to leadership. Until the movement is able to align school founders and foundation finance with an operationally oriented leadership representative of most charter schools, charters will remain an idea for the future rather than the present. ●

# Social Networking, the Next Big Thing in American Education

**Is there a soul out there** yet to hear the buzz about MySpace, Facebook, Friendster, LiveJournal, or any of the other social networking resources that currently boast registration in the double-digit millions?

By now, those of us who reside in locales other than in caves or under rocks have at least caught a glimpse of the online social networking furor. If we haven't actually received invitations to become an acquaintance's "friend" or had a search engine deliver us to a person of interest's "wall" or personal Web page, then the magnitude of what's going on online may have simply reached out and grabbed our attention from the cover of *Newsweek*.

Are these seductively easy-to-use resources powerful? You bet. Facebook's growth rate is at 3 percent — that's 3 percent per week. The significance of this phenomenon is not being exaggerated.

Perhaps the time has come for those who ponder what's important for education to consider social networking and divine what potential for positive change and improvement this tech-driven social juggernaut has for schools and the people whose lives are defined by them.

# Let Them

BY MARK GURA

# Have Tech

ILLUSTRATION BY TOM McKEITH

**Social Networking:**  
the practice of  
creating social  
contacts by making  
connections through  
individuals.





# Expanding the Learning Environment

*Mineola UFSD employs video distribution for instruction to students, staff development and district communication.*

Located in Mineola, N.Y., the Mineola Union Free School District is comprised of five elementary schools, one middle school and one high school. Roughly 1,200 computers are connected to the district's network for use by its 2,700 students and 800 faculty and staff members.

The mission of the Mineola UFSD is to inspire each student to be a lifelong learner, pursue excellence, exhibit strength of character and contribute positively to a global society. Given the pervasiveness of technology in the lives

of today's students, Mineola UFSD is committed to utilizing technology to develop an inspiring and creative learning environment.

The district recently purchased **Alcatel-Lucent's video distribution system**, offered in partnership with Video Furnace, and implemented the solution in late 2006. The purchase was prompted by the aging coaxial and head end infrastructure in each district building, as well as the lack of consistent and reliable CATV distribution across the district.

The video distribution system makes it possible to distribute robust video content via the district's existing communication network. The system provides a comprehensive, easy-to-use, video-on-demand system that revolutionizes the way films and videos can be used for instruction to students, staff development, and district communication. High-quality

“The Mineola UFSD is working to integrate technology into the classroom to enhance our students' educational experience. Alcatel-Lucent's [video distribution] platform provides an unrivaled user experience. It's an intuitive and easy-to-use system that has been embraced by both students and teachers as an important learning tool.”

— Dr. Michael Nagler, Deputy Superintendent, Mineola UFSD

video, including live television feeds, can now be shown on any computer monitor or projector connected to the network. More importantly, videos from the district's vast library collection will be immediately available, with the click of a mouse, on any computer and projector connected to the network.

According to Mineola UFSD Deputy Superintendent Dr. Michael Nagler, and Josh Lipton, senior systems consultant for Core BTS Inc., the system is primarily being used to connect to the district's existing library of video assets and live television. Used primarily for classroom instruction, teachers can use pre-established bookmarks to specific locations in specific videos. This allows the teachers to jump to a specific location within the content.

The system is also being utilized for professional development. Training for teachers and staff is recorded and distributed using the video distribution system.

The district is investigating ways to open the system up for student usage, such as morning announcements and class projects. They are also planning to use the system to distrib-



#### Deployment of video distribution provides:

- Expanded learning environment — Access to CATV and VoD across the district
- More effective use of resources — No longer required to manually distribute films and videos to classrooms
- Hands-on learning experience — Students produce video programs, like the morning announcements, that can be archived for on-demand viewing
- Ability to leverage system to record and archive school events and activities for viewing by students, staff, and parents

ute video of school events, such as sporting events, programs and assemblies, to students, teachers and parents.

“The Mineola UFSD is working to integrate technology into the classroom to enhance our students' educational experience,” said Mineola UFSD Deputy Superintendent, Dr. Michael Nagler. “Alcatel-Lucent's [video distribution] platform provides an unrivaled user experience. It's an intuitive and easy-to-use system that has been embraced by both students and teachers as an important learning tool.”



For more information on what Alcatel-Lucent can do for your school, visit [www.Alcatel-Lucent.com](http://www.Alcatel-Lucent.com) or call 1-877-425-8822

### What's All the Fuss About?

Social networking technology is revolutionizing the way people communicate and organize themselves for a wide variety of purposes. A great deal of it involves informing others about one's interests, abilities and projects — all of which tap into a school's most valuable resource: people.

While a cursory review of social networking sites may lead to the impression that they represent little more than a platform for flirting and gossip, underneath this lies vast potential for getting serious work done. The phenomenon deserves diligent consideration.

The network founders themselves understand that their resources are inspiring more serious use and they are altering their business plans in anticipation of this. Facebook, for instance, is no longer simply for college students but now accepts high schoolers and adults not affiliated with a school. As a result, a vast number of groups are established on a continual basis for people with a wide variety of interests and needs.

### The Engine, the Fuel, the Driver

Social networking technology is a loose term created to describe easy-to-use, interactive online resources that allow individuals to identify, interact and collaborate with one another. Its core feature is the personal profile, a body of descriptors about the interests, behaviors and goals of registered members that subscribe to and use a social networking resource. These participants define and present themselves to one another and the community individually, while seeking and finding partners and forming groups.

Participation gives the heady experience of effective and satisfying communication and partnering. The informal nature and strong appeal of these technology-based communities is establishing a vast, new online culture.

### Why Now?

Online social networking resources are not new, but their moment appears to have arrived — they have significantly penetrated the general population's consciousness, and

society senses the value and excitement they offer. Reflecting on this, we can see that this is not a fad, but the maturing of an established phenomenon. The result is that wise educators can take advantage of a new set of resources and strategies for accomplishing things. Consider the following:

- There is a rich set of social networking resources (as well as related Web 2.0 content authoring tools that work with them) currently available and, in many cases, free.
- Understanding and appreciation for the value of networking as a way to accomplish things of importance has never been greater.

Perhaps the time has come for those who ponder what's important for education to consider social networking.

- The nation's teacher force is getting younger. In other words, more young people of the Facebook generation are showing up in classrooms, already acclimated to online social networking.
- Another dimension of this "younging" of the teaching force is the current mass exodus from the classroom by teachers at or approaching retirement age. One result of this will be the need for greater networking to inform and prepare young teachers in the absence of the mentoring and coaching provided by senior colleagues.
- Education requires collaboration across traditional boundaries. Moving beyond a test-centric focus, educating for higher-order skills will require more colleague-to-colleague exchange of knowledge and reflection than can be accomplished through social networking.

### Digital Ear to the Ground

Those with their ears to the ground are picking up strong signals that social networking will figure big in education during the coming years. Both CNET.com

and *Wired* magazine recently ran articles describing how social networking can be tapped to greatly improve education.

The National School Boards Association recently signaled that the time is right to begin this exploration in earnest by releasing the report *Creating & Connecting*. While much of the report is directed at understanding and refining policy on student use of such resources, it communicates an appreciation of the power and omnipresence of social networks, encouraging administrators and policymakers to consider such tools for achieving educational goals.

Among the startling points the report

makes is the observation that "social networking is increasingly used as a communications and collaboration tool of choice in businesses and higher education. As such, it would be wise for schools, whose responsibility it is to prepare students to transition to adult life with skills they need to succeed in both arenas, to reckon with it."

Furthermore, the report cautions educators that "many adults, including school board members, are like fish out of water when it comes to this new online lifestyle.





It's important for policymakers to see and try out the kinds of creative communications and collaboration tools that students are using — so that their perceptions and decisions about these tools are based on real experiences.” Leaving little guesswork in this regard it goes on to firmly recommend that social networking be used in schools and districts for staff communications and professional development, citing impressive statistics about such use already in place.

Providers such as Google have formally declared their applicability to education by tweaking and repackaging their resources to appeal to educators. Others such as TeachAde, Tapped In, TeacherLingo, Educationbridges Elgg and StudyCurve, are all developed specifically for educators. This group of social networking resources continues to grow, refining and perfecting educator offerings.

### The Right Stuff at the Right Time

Social networking resources are the right stuff for today's educators because:

- They are very much Web 2.0, and don't require a high level of technological know-how; access to high-end equipment or connectivity; or special permissions to allow activity beyond the typical appropriate use policy. Little if anything stands in the way of spontaneous, somewhat informal, colleague-to-colleague communication and collaboration.
- The daisy-chaining nature of identifying friends and creating or subscribing to lists of links, resources, and other colleagues enables professionals to sort themselves and form groups on-the-fly, in a natural and powerful way that no formal, hierarchical organization can make happen as powerfully or meaningfully by traditional means.
- Furthermore, many of these Facebook-type resources allow the user to embed blog links, hosted digital photos, videos, podcasts and slideshows — providing valuable, self-produced content and disseminating it in a highly efficient and meaningful way.

### Can Tech Walk the Walk?

Social networking technology is more than just the right stuff in terms of supporting people to define what's right for them. Once that's been accomplished, it is all about bringing together the right combinations: content creators and content consumers, collaborators and colleagues, students, teachers and the education community.

As with any venture, the Internet alone is sometimes not very useful. It is the information that users put into it and the impact they have on the Internet that make it such a commodity. Many educational providers impact the Web by building content resources that are published online. Then the question becomes: How will they get people to find these resources and embrace them?

Through social network technology's per-

thoughts on applying social networking and related resources to supporting colleagues. “I think that eventually, this will prove to be useful across the board, but currently there is great potential for professional development activities,” he said. “The traditional staff development mode of seat time has proven to be very expensive and not all that effective. Educators prefer to acquire their

**“Currently there is great potential for professional development activities [in social networking].”**

**Dan Domenech**, senior vice president of McGraw-Hill School Education Group

son-to-person distribution scheme and its user-informed, demographic-based matching of content and consumers, we begin for the first time to answer this question.

Dan Domenech, former superintendent of Fairfax County Public Schools in Virginia, and currently senior vice president of McGraw-Hill School Education Group, specializing in Web-based information and support resources for district-level school administrators, recently shared some

knowledge at their convenience. Podcasts and the Internet certainly provide the option of learning on the go.”

McGraw-Hill is just one company beginning to respond to the appearance of these types of technology. SchoolNet, which supports public school districts in their efforts to improve efficiency and increase academic achievement, is also focused on these emerging resource types. Luyen Chou, senior vice president of SchoolNet's Global Networks, envisions social networking technologies helping administrators mine the best and most practical thinking of their districts' teaching and supervisory forces in order to focus on and highlight content and practices that will ensure increased student achievement.

“K-12 teachers have historically operated in relative isolation,” says Chou. “There is an enormous amount of innovation that takes place in individual classrooms, but so few opportunities to share, validate and

### How Many, Actually?

Site	Accounts
MySpace	200 million
Friendster	50 million
Facebook	43 million
LiveJournal	14 million

## Education must make a diligent effort to understand this social networking phenomenon, align itself with it and shape it further.

improve these innovations through genuine collaboration and comparison of best practices. Online social networks, built on top of tools and concepts such as blogs, wikis, discussion forums, user reviews and ratings, have the potential to provide the context for genuine learning communities.”

In a sense, social networking technologies, when embraced as part of district planning and management, represent a significant first break with the choice of either top-down or bottom-up focused reforms. These tools allow for a much more authentic partnership between the individuals associated with both levels in ways undreamed of before their emergence.

SchoolNet is developing an online global learning community that will connect educators, parents and students worldwide. This online community will feature best practices, the latest educational news, research and high-quality learning resources. It will serve as an open forum for sharing ideas and showcasing innovative educational practices. This forum will embrace aspects of social networking that will set it apart from traditional online information and threaded discussion resources

According to Chou, SchoolNet’s Global Networks will include:

- theme-based blogs focused on topics of specific importance to the K-12 community, authored and maintained by K-12 stakeholders;
- a community-owned, creative commons compliant wiki encyclopedia of K-12 concepts and terminology;
- the ability for the community to rate and review all content, including user-generated content; and
- the ability to ask and answer specific questions of the social network community.

The anticipated impact of this will be a truly different type of online initiative. This new approach will allow administrators to come up with the right combination of technology resources and present and deploy them so that not only are they made available, but that the right concepts and materials find their way to the right individuals.

As part of this, the system will encourage individuals to identify their interests and goals, and seek out associations with like-minded individuals – dimensions that are central to social networking.

According to Chou, the truly distinctive aspect of the Web as a social and transactional platform is two-fold: “It’s the access to an incredibly vast universe of people and ideas coupled with increasingly optimized

**“I believe this is the right time for progressive educators to embrace the concept of accountability.”** Luyen Chou, senior vice president of SchoolNet’s Global Networks

methods for finding what’s relevant. For instance, if you are a new middle school teacher whose students are getting by in language arts but struggling in math, we should be able to provide an extremely targeted, relevant Web experience for you by connecting you with the ideas, resources and people that are of most value to you.”

What would putting such a body of resources in the hands of educators look like and what sorts of results might it produce? And how would this be relevant to professionals working in the current world of data-driven instruction and accountability consciousness?

Chou says he has long believed that the concepts of accountability and the use of data to improve classroom instruction “have been unfairly yoked to traditional, non-progressive educational methodologies. Among progressive educators, it is almost sacrilegious to talk about data. Perhaps this is because the data we typically collect have heretofore been quite primitive and often fail to catch the nuances and subtleties of student learning.”

He adds that educators are now learning to capture richer data through multiple, more “authentic” instruments, such as portfolios, performance-based assessments, classroom observations and surveys.

“We are learning to use such data not just for black-or-white, summative evaluation, but as a more dynamic dashboard for charting a students’ course of learning,” he says. “As a result, I believe this is the right time for progressive educators to embrace the concept of accountability, and to make it a priority to demonstrate the effectiveness of progressive pedagogy using real data.”

As an example of what this might look like, he refers back to the early 1990s, when







he helped oversee the development and delivery of a computer-based archaeology project to teach sixth-grade social studies. “The students’ excitement was palpable, and the amount of learning that took place was plainly evident,” Chou says. “But much of what the students learned was not what we traditionally measure. What if we had had the ability to measure ingenuity, enterprise, problem-solving skills and team leadership, in addition to mastery of the details of ancient Greek history? This would have allowed us both to provide a more compelling justification for the project itself, while optimizing our ability as educators to provide individual learning opportunities to supplement, remediate and enhance each student’s competencies, knowledge, skills and habits.”

A wonderful vision, but can we realize it in today’s schools, which, whatever the prevailing instructional philosophy, for the most part are still married to organizational logistics developed decades ago? Once we move past standardized curricula and simplistic student responses (such as answers on multiple choice tests or even formulaic responses to essay questions), how do we manage the dizzyingly complex problem of finding and pairing students, teachers, and supervisors based on a vast universe of possible learning themes? The answer in large part is social networking technologies, which, despite the superficial appearance of their current applications of dating and gossiping, were really developed to handle these very types of challenges.

#### **Not a Moment Too Soon**

Social networking is an innovation that’s coming not a moment too soon. Schooling

today largely remains as isolated an experience as it was in the 19th century, when the current flavor of education for the masses was established. This is often cited as a root cause of lack of efficacy and satisfaction. We now have, however, a technology that can address this and do so without a massive restructuring of the education institution.

And how do people directly involved in steering the course of public education’s education technology policy view all this? Rick Gaisford, educational technology specialist for the Utah State Office of Education, says his department is examining Web 2.0 applications to determine their educational validity. “They present great opportunities and they also present great challenges,” such as viruses or inappropriate content. “The challenges have not been able to be dealt with so the vast majority of Web 2.0 resources such as blogs and social networks are currently being blocked by our filters. Although there are potentially very good educational applications for social networks sites like MySpace and Facebook, the risks are slowing their implementation by our schools.”

Gaisford believes the most obvious value of social networking resources would be the opportunity for students to create online portfolios to demonstrate competency and mastery of curriculum standards. “Currently many students use MySpace and Facebook to create ‘portfolios’ of personal preferences, interests and activities,” he says. “If we can find a safe way to engage students with this type of resource we can better engage our students in their education and the value of doing their very best.”

In the world of K-12 education, blogging and social networking tools have until

## **This One’s for the Teachers**

**TeachAde:** Professional social networking site designed specifically for K-12 teachers, has resources for classroom use.

**Tapped In:** This site is geared toward bettering professional development for teachers. Site is for professional development providers and educators.

**TeacherLingo:** A blog-centric environment, this site is for educators at all levels.

**Educationbridges Elgg:** An emerging social networking resource for educators.

**StudyCurve:** A place for study groups to form on a variety of education-related topics.

now largely been appropriated by committed but disenchanted educators seeking to recapture a sense of control and autonomy over their professional lives. If nothing else, this phenomenon illustrates the very strong desire educators have to meaningfully participate. That they are willing to seek out avenues to do so and invest their personal time and effort in them is testament to the quality of people in the field. The field, however, has not done an adequate job of reciprocating and providing avenues for them to shine and contribute. Social networking represents a golden opportunity to reverse that situation.

Thinking about the most salient characteristics of the age we are currently working in, one can’t help but come up with descriptions like Web-enabled, connected and networked. The current hyper-popularity of digital social networking resources is no accident or fad; it is our authentic response to an environment that is more complex and inspiring because of this. Education must make a diligent effort to understand this phenomenon, align itself with it and shape it further. To do any less is to ignore the future of education and the young people it serves. ●

# From Thin Networks to Fat Savings

How Open Source, Virtualization and Thin Client can Rescue Technology Budgets.

**M**any schools struggle to keep up with the cost of computer technology. With hundreds to thousands of students and relatively small annual technology budgets, schools sometimes have to be creative to keep their classroom computers running. In addition, most of the budget is often spent on staff computers and network servers, leaving little for student computer upgrades.

Recent studies have shown that schools can save as much as 75 percent of their technology expenses by using open source technologies, virtual PCs or thin client devices – network computers without a hard disk drive – instead of continuing on the software and hardware upgrade cycle.

## Go Virtual

Virtualization means different things to different people. A main focus of virtualization is *server virtualization*, or the hosting of multiple independent operating systems on a single host computer. From a business perspective, there are many reasons for using virtualization. Most come down to what's called *server consolidation*. Simply put, if districts can virtualize a number of underutilized systems on a single server, there are distinct savings in power, space, cooling and administration.

With *application virtualization*, all computing is done at back-end data centers, and applications and information can be Web-enabled and delivered to any device,

at any location, over any connection – including low-bandwidth and wireless. This allows schools to operate more efficiently and manage their limited IT resources more effectively.

Once all application processing is shifted to central servers, application virtualization and streaming can provide access to any application from any device over any

connection. School districts can use older multi-platform computers in conjunction with inexpensive thin client terminals, thereby bridging the digital divide and delivering on the vision of equal access to instructional resources.

In addition to IT hardware cost-savings, the application virtualization helps schools and districts save money in other ways.



Even small support staffs are enough for the centrally-managed virtual environment. Virtualization extends network administration budgets.

Collier County Public Schools in Florida is currently implementing the Virtualized Desktop Initiative, with the goal of developing the largest virtualized desktop environment in the education world. Instead of having traditional PCs at remote sites, the district uses blade servers – self-contained computer servers designed for high-density usage – to host the district’s desktops remotely by way of a data center.

By installing virtualization on the blade servers, it enables computing power to be distributed to multiple operating systems, with each user having his own processing power, memory and hardware. “We thought we’d be able to get 12 desktops per blade server, but we’ve actually been able to scale much higher than that,” says Tom Petry, network technology coordinator for the Collier County District School Board. Instead, Petry thinks the district can double that number, allowing for 24 desktops per blade server. “It will enable us to cut costs. The cost of centralized computing is so much lower.”

More importantly, Petry adds, centralized computing allows for anytime, anywhere learning. “Students can go anywhere in the district or the world and are able to access the network. It’s 24/7 learning.”



PHOTO COURTESY OF WIKIPEDIA

Installing virtualization on the blade servers enables computing power to be distributed.



Data storage centers are able to house Internet servers en masse, thereby reducing in-school storage and maintenance.

### Trim Fat Spending

In a thin client network, a server does the actual processing tasks, while significantly less powerful computers act as “clients,” just providing the keyboard, mouse and video-display interaction with the server. In this setup, the server alone requires maintenance and configuration, significantly reducing the support tasks associated with computer use.

Older PCs are then converted to run as super-fast thin client workstations, or new specialty thin-client machines can be purchased and then connected by a regular computer network to the server.

De Soto Unified School District #232 is one of the fastest growing school districts in Kansas. It serves students from the 100-square-mile area of Johnson County, Kan., which includes the cities of De Soto, Shawnee, Lenexa and Olathe.

Student enrollment for the 2007-08 school year has increased to approximately 6,000 students. The district consists of six elementary schools, three middle schools and two high schools. De Soto USD initiated a pilot implementation of thin client solutions in 2004. In the 2004-05 school year, the district had two schools using thin client servers. After the successful pilot year De Soto expanded its thin client environment to a district-wide configuration in 2005-06.

“We’ve had nothing but great feedback from it,” says Jeff Mildner, director of technology for De Soto USD #232. “All of our students and teachers have 24/7 access, provided they have a computer they can access away from school. With our wireless environment and the laptops we have available, the [thin client solution] has created an incredibly flexible learning environment in our schools.”

The thin client environment also aids the district's technology staff. "In terms of the back end, for my staff on the management side of things, it is a tremendous asset for us," says Mildner.

Mildner explains that the thin client solutions extended the lifespan of the district's laptop and desktop computers. "We have some desktops that are eight years old," he says, "and if we weren't using [thin client] we would have had to upgrade those a year or two ago."

De Soto USD #232 opened a sixth elementary and third middle school in fall 2007, and according to Mildner those schools are also equipped with thin client solutions.

Similar results occurred in Massachusetts. Northfield Mount Hermon School in Mount Hermon, Mass., implemented a thin client strategy in 1997 that significantly reduced administrative support costs. Information Technology Director Jon Shannon later designed and implemented a school-wide application of thin client technology that improved access to academic network resources, put multimedia resources in every classroom, reduced student computer downtime and reduced annual equipment depreciation by more than \$200,000. To date, thousands of students, teachers and administrative staff have benefited by having access to the school's software and network resources from virtually any Internet-connected computer. This highly successful project won an innovation award from the National Association of Independent Schools.

**"With our wireless environment and the laptops we have available, the [thin client solution] has created an incredibly flexible learning environment in our schools."**

**Jeff Mildner**, director of technology for De Soto USD #232

### Free and Open Source

Licensing and purchasing costs for technologies often limit the scope of use in educational settings. Open source software, developed by a community of programmers, provides a means for the use of technology in a more ubiquitous fashion for students and teachers by leveraging available funding. Open source software is a form of technology that is easy to update, manage and keep current. Subscription-based services mean that customers can upgrade software and hardware according to their own timeline, rather than by vendor requirement. While open source does not require the customer to purchase a license, the real value lies in the freedom and flexibility of that software. Michigan City Area Schools in Indiana has implemented 300 Linux work-

stations in 10 classrooms. The 6,000-student district switched to open source for word processing and other English program components and in the first year saved \$150,000 in licensing costs alone.

In addition to licensing costs, schools can also save on operating systems costs. Indiana offers one of the most extensive statewide programs to put low-cost Linux workstations and open source software to work in classrooms to enhance student achievement. More than 100,000 students in 100 high schools across Indiana use Linux workstations thanks to the Indiana Affordable Classroom Computers for Every Secondary Student (IN ACCESS) grant program.

Indiana established the IN ACCESS grant program to enable schools to purchase classroom sets of low-cost computers that use open source operating systems. Because of open source technologies, schools were able to keep operating systems costs down to \$5 per year.

### Copylefted?

Software that is developed openly by a community of programmers may seem like it would be a chaotic process, but it produces extremely stable long-term results. Linux is just one example of thousands of computer programs that have been "copylefted," the opposite of copyrighted and where the program's code is put into public domain. A widely known example of an open source software program is the Apache Web server software, which is used to run more than 70 percent of the world's Internet Web servers.

Source: <http://www.reallylinux.com/docs/ltsp-oped.html>

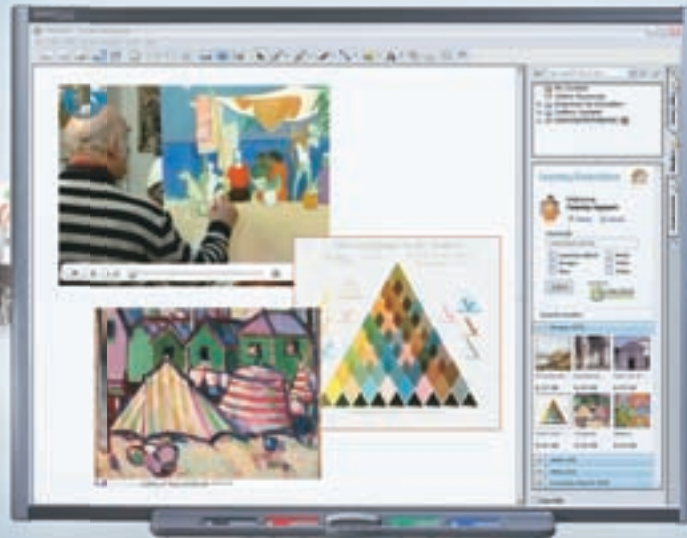
### Full Use of Funds

With tight technology budgets, IT personnel have to look beyond just purchasing new computers every few years and spending a massive amount of funding in software upgrades and licensing fees. Schools cannot reasonably revamp their computer systems when the technology requires it and must therefore turn to other ways to stay ahead in the technology game.

School decision-makers now can look to De Soto Unified and Indiana schools for real-world cost saving examples. The fact that some schools in the United States keep their operating systems budget to \$5 per year proves that there is another, more efficient way. ●



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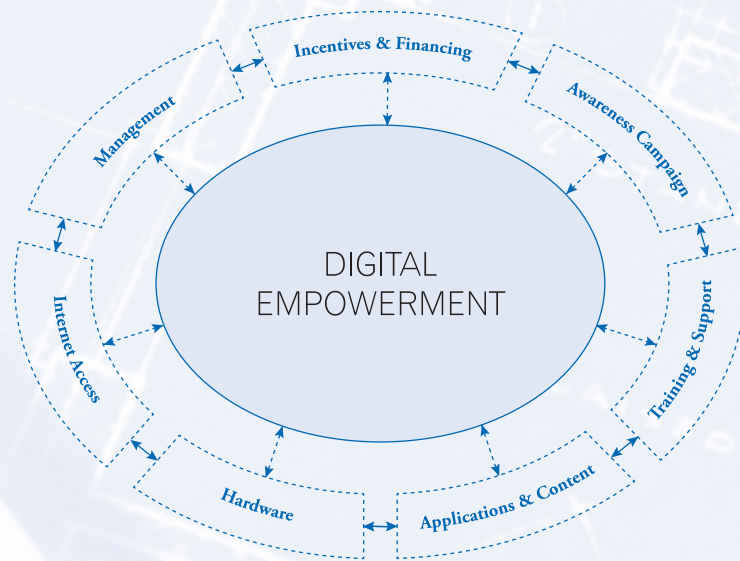
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# werment



IMAGE SOURCE: [HTTP://WWW.PCMAG.COM/SLIDESHOW/0,1206,L=209466&S=27550&A=209473,00.ASP](http://www.pcmag.com/slideshow/0,1206,L=209466&S=27550&A=209473,00.ASP)

“I’ll give the computer the best use ever.” Jonathan Berrios

◀ Jonathan and Eduardo Berrios were the 10,000th family served by Computers for Youth, a nonprofit organization that provides low-income families with home computers and low-cost Internet service.



“As a graduate of the Technology Goes Home program, I have a renewed sense of direction in life. Soon after receiving my computer, I began composing songs again. This is something I tried when I was younger but had totally abandoned after I had children. I am finally listening to the calling I’ve heard throughout my life and I am now actively pursuing my childhood dream of becoming a songwriter/music producer.”

*The mother of a graduate of the Boston Digital Bridge Foundation’s Technology Goes Home Program.*

When a student graduates from the Technology Goes Home program, their family can purchase a new computer, printer and Internet access for approximately \$21 per month through a special Bank of America guaranteed loan program (no interest and no down payment).

Source: [www.bostondigitalbridgefoundation.org](http://www.bostondigitalbridgefoundation.org)



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BY JAMIE DEVEREAUX

**C**alled Dig Info by students, George Otte's Digital Information in the Contemporary World class is an introductory course where learners go beyond Google to the world of blogs, wikis and discussion boards. In the new CUNY Online Baccalaureate program at the City University of New York (CUNY), the nation's largest urban public university and home to more than 400,000 students, Otte's class is becoming fluent in Dig Info.

#### InfoFlu

Students' learning styles have shifted from the old-school information literacy method – the basic search-and-find function of the Internet – to the current trend in Internet use of creating content. This is not an unexpected occurrence; a Pew Internet & American Life Project report found that 57 percent of online teens create content on the Web. That translates to 12 million teenagers creating Web pages, blogging and sharing photos and videos.

Otte's focus at CUNY, with this new generation of content creators, has been dubbed *information fluency*. This means going past the basic ability to search the Internet and all its resources to seeing the advantages of creating and sharing information and also viewing information with a discerning eye.

"Information fluency gets at the fact that what matters is at least as much production as consumption, using and doing ... as well as finding," said Otte, academic director of the CUNY Online Baccalaureate and university director of Instructional Technology.

With Otte's brand of information fluency comes his discussion board-blog-wiki mash-up that caters to the digital natives in his online class at CUNY.

#### Mash-Up Format

In the Dig Info class every student has a blog, participates in class-wide and group wiki projects, and posts to the discussion



## Dig Info

Making Students Fluent in the Language of Digital Information.

board. This mixed medium format of the course lets students experience a wide range of Web tools and become well-versed in a variety of Web skills. "Blogs and wikis, as well as discussion boards, serve different purposes that would be difficult – if not impossible – to achieve in a traditional classroom," said Otte.

The discussion board takes the place of the custom face-to-face class discussions. As in a traditional classroom, the professor poses a question to the students, but in

Otte's class the discussion board is the forum where those conversations can take place. According to Otte, everyone contributes in the online forum.

The individual student blogs are areas for students to interact with class readings or post other thoughts on in-class subjects.

#### Fast Fact

Information fluency is the ability to gather, evaluate and use information.

Source: University of Central Florida <[www.if.ucf.edu/](http://www.if.ucf.edu/)>





### InfoFlu at ISTE

The International Society for Technology in Education (ISTE) updated the National Education Technology Standards for Students to focus more on skills and expertise and less on tools. Specifically, they address:

- creativity and innovation;
- communication and collaboration;
- research and information fluency;
- critical thinking, problem solving and decision-making;
- digital citizenship; and
- technology operations and concepts.

The blog format is conducive to more reflective and personalized work as it allows for students to create well-thought-out posts and contribute in a way that is meaningful to them.

The wiki portion of the class is where students can work together on collaboration pieces. “The first wiki project [in the course] is a glossary of terms the students define for each other,” Otte said, “thereby doing some of the teaching in the course.”

### Accuracy and Authority

With the influx of Web content creators comes the question: How reliable is information found online? Which is pastiche and which is the original? How can one tell what is trustworthy content? Otte

**“Blogs and wikis, as well as discussion boards, serve different purposes that would be difficult — if not impossible — to achieve in a traditional classroom.”**

**George Otte**, academic director of the Online Baccalaureate and university director of instructional technology at CUNY

assists his students in tackling these questions by involving them in the back end of Web-based content. He refers students to Web sites created for professors who act as evaluators and oversee online research. Otte concedes that this method is not as comforting as pointing students to specific evaluator sites that tell students which sites are unequivocally accurate and reliable. With differing professional opinions about Wikipedia and other such Web resources, giving students reliable tools with which to evaluate sites on their own may be the best option. “I point out and then discuss how there are discrepancies among [professors], often having to do with disciplinary differences or genuine controversies in that field,” said Otte.

In line with the postmodern view, judgment of a resource’s value lies solely with the viewer. As a professor, Otte said he would like to get his students to think critically about not just the evaluation of sources, but also about the evaluators. He deems this process not just an important skill to acquire, but a necessary one.

### Will Work for Blogs

While the trend for students may be moving toward sharing self-created content and other networking tactics, the workplaces of the world may be in for a state of culture

shock. When asked if today’s students would be prepared for the workforce, Otte said that the real question may be whether the workforce is prepared for them. “We have very compartmentalized and hierarchical structures for getting things done in the so-called real world,” Otte stated. “Those structures are easily circumvented in the digital world, and in ways that impinge on the real world.” As an example of this, Otte described how people equipped with video cameras can garner as much attention by way of YouTube as professional TV programmers might with a new prime-time show.

### Spruce it Up

Just because online content is delivered through mainly text-based methods does not mean it must be dry and dull. Otte adheres to this notion by enhancing blog posts with related videos: “I’ve found that I can almost always find and link to a video on the Web that sheds some amusing or illustrative light on whatever I’m talking about.”

Adding a related video is just another way to increase today’s students’ interest in learning. A mash-up format to learning, including wikis, blogs and other interactive online content, will hold the interest of students across the board, no matter their preferred style of learning. ●

**Dig Info Course Description:** “What does it mean to learn — to inquire, to investigate, to collaborate, to research — online? In this course, students will propose answers to these questions by exploring new communication technologies and probing their impact on contemporary understandings of identity and community. Students will find, examine and evaluate online resources.” *Source: CUNY Web site <www1.cuny.edu/online>*

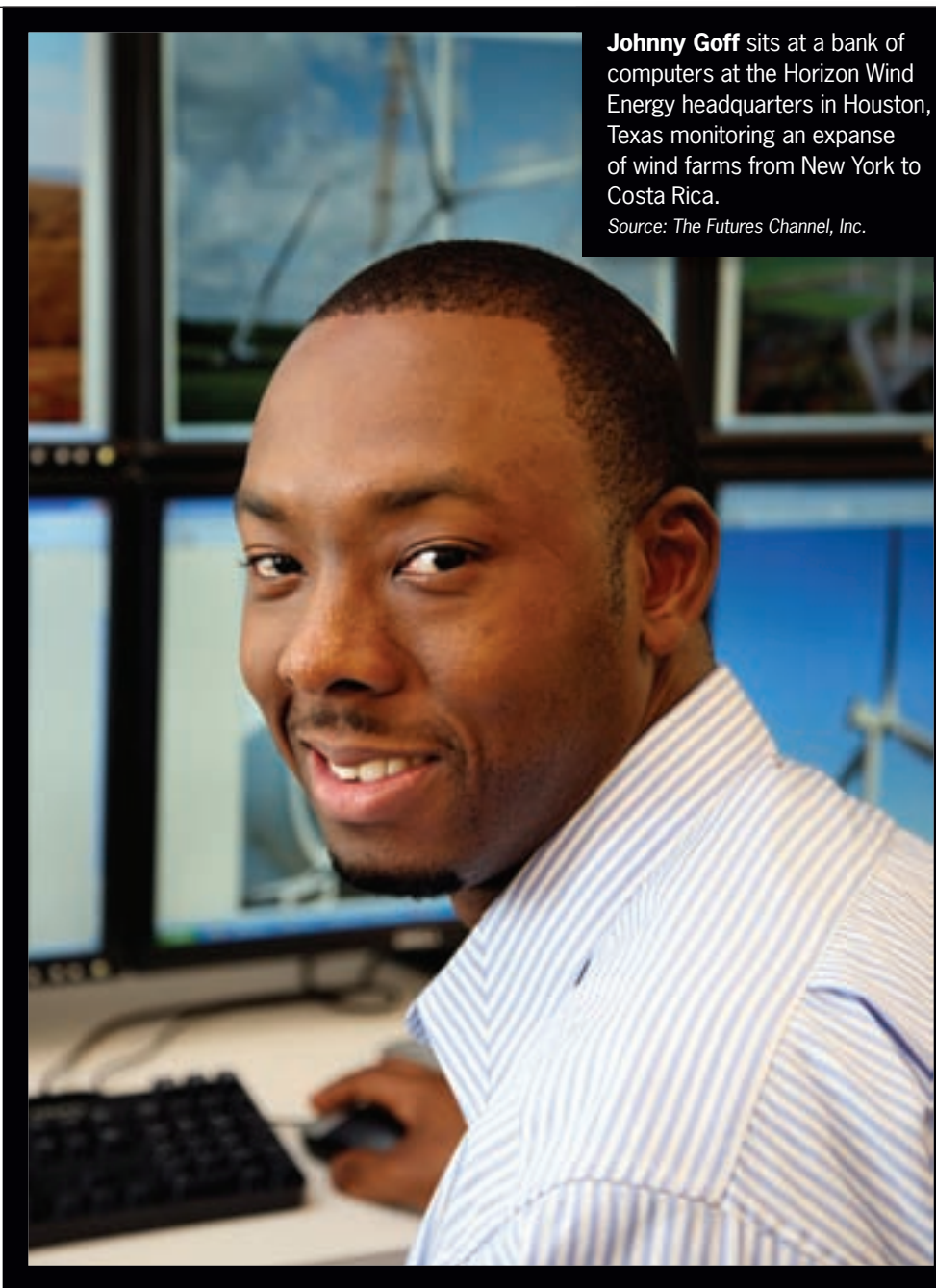
“Look at this, Mom!” My middle school-aged son, Aldo, wants to show me a YouTube video – a vintage clip of a Volkswagen Beetle as it beats out a fancy sports car. The video is similar to the tortoise and the hare. The sports car keeps breaking down and the VW bug keeps passing it. But I am having a hard time paying attention. Why? I am on the computer next to his, trying to word process my next lesson plan. He is in one world and I am in another. His includes audio and video, mine is text-based print.

This situation is similar to what is happening in schools. When asked which professional tasks they do weekly using technology, 86 percent of teachers reported that the technology tool they use most often is a word processor for tests and handouts, according to *Visions 2020.2: Student Views on Transforming Education and Training Through Advanced Technologies*, a report compiled by the U.S. departments of Education and Commerce and NetDay, a national education technology nonprofit group. The second most popular response was the use of technology for record keeping, at 75 percent. Teachers are using technology – 74 percent of them report that their jobs are easier because of it. But how can technology do more than make teaching easier? How can technology make teaching better?

In order to meet the ambitious goals set before us, students need to catch the vision and we, as educators, can help. The students in this generation are not intimidated by technology and many of them feel that when they come to school they need to “power down” because the technologies that they embrace are not fully utilized in school. Teachers have the potential to engage students with technology and make teaching better.

#### The Year of Math and Science

2008 is said to be the year of math and science. In the president’s proposed budget for fiscal year 2008, he allocates \$365 million for the American Competitiveness Initiative (ACI) targeting improvement in primary science and mathematics education. The proposal would fund the Math and Science Partnerships at the U.S. Department



**Johnny Goff** sits at a bank of computers at the Horizon Wind Energy headquarters in Houston, Texas monitoring an expanse of wind farms from New York to Costa Rica.

Source: *The Futures Channel, Inc.*

PHOTO PROVIDED BY STEVE HEARD

## Keeping It Real

Digital Video Connects Math and Science Education to the Real World.

BY MARY KAY BACALLAO

of Education with \$182 million and also require science to be included in the states’ Adequate Yearly Progress (AYP) calculations under NCLB. If approved, this would require states to include the results of science assessments as soon as the 2008-09 academic year. The proposal targets 100 percent proficiency in science by 2020.

In addition to the American Competitiveness Initiative is the America COMPETES Act, which is also geared toward improving math and science education. The COMPETES Act is a bipartisan effort that shows a willingness in America’s legislature – and thereby its citizens – to fund these increasingly important aspects of education. With these funds come

## Popping in a video was easy, but did it make learning better?

expectations of improvement in the form of timelines and preset goals.

How can the proposed student proficiency be achieved? Today's students entertain themselves and interact with each other in technology-rich environments. They have grown up and thrived in a world of visual and digital media – media that offers the opportunity to teach the complex thinking and problem-solving skills needed in the 21st century. Visual and interactive media can enhance student interest in science and mathematics, and provide an avenue for professionals in those fields to reach their future potential workforce.



PHOTO PROVIDED BY STEVE HEARD

**Emily Hardy** is a wind analyst at Horizon Wind Energy headquarters in Houston, Texas. It is her job to determine the best places to put the wind turbines throughout the wind farm site. "We use a lot of different equations," Hardy said. "I've always liked math and physics, so those were great classes to take to get you ready for a job like this."

Source: *The Futures Channel, Inc.*

### Video in the Classroom

How can technology be used to improve teaching? Motivation and student engagement are key factors in learning. Forming connections to prior knowledge plays a vital role as new learning needs to be connected to previous knowledge for long-term understanding and information recall.

The education system has come a long way in the use of video in the classroom. When video was first introduced into the classroom, many teachers saw it as an opportunity to take a break. After being "on stage" in the front of the classroom all day, they were worn out. Showing a filmstrip provided a nice change of pace and allowed the teachers to get some paperwork done. Teachers began showing more videos, leading to overuse, predictably on a Friday afternoon. These videos were, more often than not, only loosely connected to the curriculum or not connected at all. Many students knew that when the lights were dimmed it was time to stop thinking and start relaxing. Some thought that videos and computers would replace teachers. But researchers have repeatedly proven that the teacher is, and continues to be, the single most important factor in student achievement. Teachers are necessary.

Popping in a video was easy, but did it make learning better? It became hard to find a video that the students would be interested in and had not already seen at home. Eventually, the novelty wore off and students began complaining about boredom. How did this happen? Did those videos cause our students to think? Did they take them to places they have never been or help inspire their imaginations?

Short digital video clips can serve to engage and prepare today's Millennial students for learning. The Futures Channel has produced high-energy, engaging video segments that can serve to activate and enrich prior knowledge. These professionally polished video clips leave the students asking for more



### Montana's Got the Goods

Montana Gov. Brian Schweitzer is a soil scientist. First lady Nancy Schweitzer is a botanist. Not surprisingly, they have many resources on call to promote science and math. Their Web site stands out as one of the best in the nation for the STEM fields: <http://www.mathscience.mt.gov/>

Here you will find all kinds of cool stuff, like science trading cards and the World in Motion program, which has students build cars, gliders and skimmers to learn about physics.

Also, Montana's Youth Forest Mentoring Program is a summer internship for high school students to learn about forest ecology.

The Geological Road Signs section shows you different interesting places in Montana — tells about the background, how they formed and shows a map of where they are located.

information. The mathematicians, engineers and scientists who develop essential products provide background information on the math and science behind their work.

Digital video resources take students to the cutting edge of innovation. Students are able to meet the people behind the scenes of our technological world. Their prior knowledge is both enriched and expanded; they are prepared for learning.

### Real Life Lessons

Preparation is only the first step in learning. Students need time to think about the information they have received and solve related problems. Deeper, more complex learning can result when students are given the opportunity

## Kids need to know what their opportunities are. Digital video in the classroom can show them those opportunities.

to learn through trial and error. This type of learning can take place when students are given opportunities to solve authentic problems.

Finding authentic problems can be challenging. Some curriculum materials have challenging problems to solve, but they are contrived. The reason for problem solving becomes disconnected with the process of problem solving. Students work hard to obtain results. They find out what X equals, but the results are irrelevant to real life. Students are unable to transfer what they have learned to real-world situations.

Other curriculum materials include problem solving as an add-on. The students learn a math concept, then are given a problem to solve with the same math concept they just learned. It is no surprise that the mathematical operation they need to use to solve the problem is the one they have just spent time practicing. So they pick out the numbers from the words and then perform the same

mathematical operation they have been working on. The students are not challenged in their thinking. Other curriculum materials go step-by-step through the problem-solving process, but give students little or no time to process the information or think on their own. How is this helping to prepare our future inventors, leaders and decision-makers?

Where can teachers find challenging, standards-based and authentic problems to engage students with? To find a real-life problem, ask the people who solve real problems everyday for a living. Students can get authentic problems from experts in the field. Taking students on field trips to see how the math, science and technology industries work would be ideal. With time and resources often limited, virtual field trips to these locations are the next best thing.

When private sector companies partner with industry experts and prepare lesson guides to accompany digital video resources,



### MN Stem

Another state that recognizes the importance of science, technology, engineering and math is Minnesota. Mn-stem.com is a fun and informative site for all things STEM. Including links to state offices, universities and resources for classrooms, the site features direct quotes from people within the field: a photographer, an architect, a recording engineer and a forensic scientist.

students are provided with relevant and related authentic problems to solve. The numbers are not contrived and there is no answer key. This is because there is more than one way to solve a problem. An answer key would limit students and teachers instead of enabling them to fully utilize all problem-solving strategies available. Who knows? They might even come up with some problem-solving strategies of their own.

For example, teachers can use digital video to take students to Maple Ridge Wind Farm in New York. Teachers can introduce students to the engineers who use algebra, physics and problem-solving skills to design and operate a wind turbine producing enough

**Robotics Engineer Maria Bualat** works on a robot prototype at the NASA Ames Research Center in Moffett Field, Calif. "When I was in eighth grade, I read an article about women engineers at NASA, didn't know what an engineer was, but I knew about NASA, and I said, 'That's what I want to do.'" She adds, "Basically, I just took the engineering path in school so I could work for NASA and here I am. It's a dream come true!" Source: *The Futures Channel, Inc.*

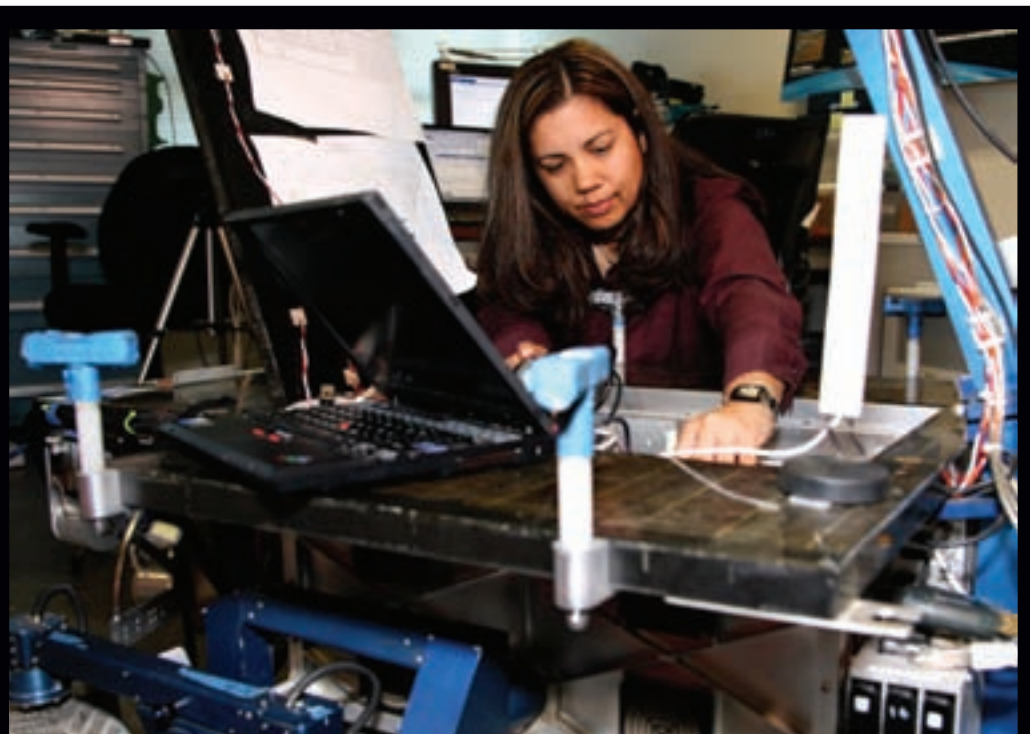


PHOTO PROVIDED BY STEVE HEARD

# 2007 Digital School Boards Survey Top Ten List

The Center for Digital Education and NSBA congratulates this year's winners in the annual Digital School Boards Survey

## Large Category - More than 15,000 students

- |   |   |
|---|---|
| <b>1st</b> Houston County Board of Education, Georgia               | <b>8th</b> Cleveland County Board of Education, North Carolina <i>(tie)</i>             |
| <b>2nd</b> Kent School District #415 Board of Directors, Washington | <b>8th</b> Cobb County School District Board of Education, Georgia <i>(tie)</i>         |
| <b>3rd</b> Fairfax County Public Schools Board, Virginia            | <b>9th</b> Anne Arundel County Public Schools Board of Education, Maryland <i>(tie)</i> |
| <b>4th</b> Cherokee County Board of Education, Georgia              | <b>9th</b> Tucson Unified School District Governing Board, Arizona <i>(tie)</i>         |
| <b>5th</b> Olathe District Schools Board of Education, Kansas       | <b>10th</b> DeKalb County School System Board of Education <i>(tie)</i>                 |
| <b>6th</b> Paulding County Board of Education, Georgia              | <b>10th</b> Klein ISD School Board, Texas <i>(tie)</i>                                  |
| <b>7th</b> Hillsborough County School Board, Florida                |   |

## Medium Category - 2,501 - 15,000 students

- |   |  |
|---|--|
| <b>1st</b> White County Board of Education, Georgia                         | <b>6th</b> Camden County Board of Education, Georgia <i>(tie)</i>      |
| <b>2nd</b> Ben Hill County Board of Education, Georgia <i>(tie)</i>         | <b>7th</b> Clarke County Board of Education, Georgia <i>(tie)</i>      |
| <b>2nd</b> Howell Township Board of Education, Nebraska <i>(tie)</i>        | <b>7th</b> Lexington Public Schools District #1, Nebraska <i>(tie)</i> |
| <b>3rd</b> Monroe County School Board, Florida                              | <b>8th</b> Troy Board of Education, Michigan                           |
| <b>4th</b> Barrow County Board of Education, Georgia                        | <b>9th</b> Walton County Board of Education, Georgia                   |
| <b>5th</b> Roanoke County School Board, Virginia <i>(tie)</i>               | <b>10th</b> Gainesville City Board of Education, Georgia <i>(tie)</i>  |
| <b>5th</b> Vineland School Board, New Jersey <i>(tie)</i>                   | <b>10th</b> Lowndes County Board of Education, Georgia <i>(tie)</i>    |
| <b>6th</b> Board of Education of the City of Marietta, Georgia <i>(tie)</i> |  |

## Small Category - Fewer than 2,500 students

- |  |   |
|--|---|
| <b>1st</b> Maine School Administrative Unit 71 Board of Directors, Kennebunk & Kennebunkport | <b>6th</b> Lamar County Board of Education, Georgia                         |
| <b>2nd</b> Lyon County Board of Education, Kentucky  | <b>7th</b> Clinch County Board of Education, Georgia <i>(tie)</i>           |
| <b>3rd</b> Board of Education Spackenkill Union Free School District, New York               | <b>7th</b> Crawford County Board of Education, Georgia <i>(tie)</i>         |
| <b>4th</b> Webster County Georgia Board of Education   | <b>8th</b> Pawhuska Board of Education, Oklahoma                            |
| <b>5th</b> Frankton-Lapel Community School Board of Trustees, Indiana                        | <b>9th</b> Chickamauga City School System Board of Education, Georgia       |
|  | <b>10th</b> Stanley County School District Board of Education, South Dakota |



energy to power 750 homes. Students might even catch the vision and aspire to learn more math and science so that they too can do something to develop ideas for renewable energy sources.

Using this model, students gain access to a primary resource: people. Also with real-world problems and scenarios comes a greater understanding of the curriculum. Now it is time for the presentation to begin. Our students, like no other time in history, have the opportunity to communicate their ideas through digital media. Student-produced digital projects have the potential to reach a vast audience. Students can have a voice. There are a number of sites where they can post their digital video productions. As they learn about current events in math, science and technology, they can create digital video projects that express original thought and ideas. Students can ask relevant questions and supply their own answers to the math, science and technology challenges of their day.



**Limitless Possibilities**

There are some students who come to school with a rich background of educational experiences. They have been to science museums and art galleries. They have traveled to distant countries and visited historical sites. They have been on guided tours and sailed to international ports. But many students have not. They come to school, day in and day out. It might be the only safe place for them. They are there to learn. We as educators are there to teach them.

**NASA Aerospace and Industrial Engineer**

**Robert Howard** assembles a portion of a mock-up he's using to help design the Orion crew exploration inside the Habitability Design Center at Johnson Space Center. "It's kind of interesting to think that you design a rocket starting with wood and foam core," says Howard, "But a lot of times there are changes that come about and you don't want to be trying to alter a final design which would cost millions or, perhaps, billions of dollars."

Source: *The Futures Channel, Inc.*

**Resources are There for the Taking**

**The Futures Channel:** A source to connect real-world professionals with students learning the field.

[www.thefutureschannel.com](http://www.thefutureschannel.com)

**Cable in the Classroom:** Provides free cable and broadband connections to schools and libraries across the country.

[www.ciconline.org](http://www.ciconline.org)

**Izzit.org:** A Web site created by television producers offering video resources for the classroom.

[www.izzit.org](http://www.izzit.org)

**The History Channel:** Speeches, student surveys and lesson plans available.

[www.history.com/classroom](http://www.history.com/classroom)

**CNN Newsroom:** The news source creates a daily commercial-free, 10-minute broadcast of the day's news geared for middle- and high-school students.

[www.cnn.com/studentnews](http://www.cnn.com/studentnews)

**There are some students who come to school with a rich background of educational experiences. They have been to science museums and art galleries.**

How will they know about the world beyond their neighborhood? How will they know what interests them? What will they base their careers on? If we really want them to know about the limitless possibilities for their futures we will take them beyond the four walls of our limited classroom. We will enable them to see, to dream, to hope and to plan. We will introduce them to high energy inventors, innovative scientists, and leading mathematicians. We will take them to the

laboratories, the testing grounds, and the technology think tanks. We can help them find their own vision for the future. In doing so, we can motivate them to achieve. Maybe one day my son Aldo will say, "Hey Mom, look at this!" And on that YouTube video will be one of his inventions.

**An Inventor**

Through a 10-minute video on PBS's Web site, students can meet James McLurkin, a



# 2007 Virtual School Symposium

November 4-6 Louisville, Kentucky

## Changing the Course of Education with Online Learning



### *The Virtual School Symposium*

*(VSS) brings together* representatives from national, state, district, private and other virtual school programs to attend the industry's leading event in K-12 online learning. The VSS conference provides important analysis, interactive sessions and thought provoking workshops for leaders looking to help shape the future of education.

*Learn* from 200 of the nation's leading experts and researchers about online learning.

*Network* with colleagues who are building virtual schools and online learning programs.

*Discover* innovative programs and new digital curriculum and instructional models.

*Explore* policy issues, new funding models and next generation education concepts to drive high school reform and redesign for 21<sup>st</sup> century learners.

*Develop* creative and innovative solutions from national and international success stories.

*Interact* with experts in pre-conference workshops that focus on topics such as:

- Learning Management Systems (LMS) for Online Programs: A Comparison
- Online Teaching: Professional Development and Quality
- How to Start a New Online Program: Strategies and Lessons Learned
- Online Science and Virtual Labs, with Demonstrations
- State Virtual School Leaders
- Research on K-12 Online Learning

VSS 2007 is limited to the first 600 attendees.

Secure your registration and housing today at [www.nacol.org](http://www.nacol.org)!





Engineers assemble a wind turbine at the **Maple Ridge Wind Farm** in Upstate New York. Each turbine soars 260 feet in the air, has a wingspan the length of a football field and can produce enough energy to power 750 homes. To assemble two turbines in a day, the engineers have to make sure they are well prepared.

Source: *The Futures Channel, Inc.*

### An Engineer

Also on the PBS Web site, students can meet Cynthia Breazeal, an engineer who designs robots to communicate and interact as people do. Students can get to know her through a 13-minute video clip. They can also go online to read some of the answers to questions she is often asked. One student asked her what she would say to girls who might think that science and inventing is something just for boys. She responded, "I say that the future welfare of our nation

**As they learn about current events in math, science and technology, students can create digital video projects that express original thought and ideas.**

depends on plenty of girls and boys pursuing careers in science and technology. If we leave it only to one gender, then we've cut our young intellectual talent pool roughly in half. I think the bigger issue is communicating to girls that science and engineering is something they should really consider."

Breazeal recommends a book that influenced her: *Adventures of Women in Science*. She goes on to talk about how having children of her own has influenced her work in designing robots. She also answers questions about the path that led her to choose a career as an engineer and recommends interesting courses for others with similar career goals.

Giving our students a picture of what it might be like to be an inventor or an engineer can help them to set math and science-related goals. Kids need to know what their opportunities are. Digital video in the classroom can show them those opportunities. ●

### Wind Farming

Harnessing the mighty power of wind is done through the use of wind turbines — which look like enormous pinwheels — that convert wind energy into electricity. A cluster of turbines is deemed a wind farm. Compared to converting coal to electricity, where more than two pounds of carbon dioxide will be emitted per kilowatt hour, wind farming is a breath of fresh air.

Source: *American Wind Energy Association*  
<http://www.awea.org/>

scientist at the Massachusetts Institute of Technology. As a child, McLurkin was interested in watching ant colonies. Now he is one of MIT's leading developers of swarm robots — multiple robots that work together to complete a task. McLurkin uses what he learned from the ants to help design his robots. He says the government is interested in making swarms of robots because they can be programmed to work together for a common goal. Students can watch a video segment about his work, time management plan and aspects of his social life.





# Discover

## TCEA 2008

### Your Destination for One-To-One Workshops and Super Sessions...

All 140 workshops will be **one-to-one!** Learn from the most knowledgeable educational technology experts in the nation in workshops with one computer for each participant. And there will be no more complaining about not getting into a concurrent session! Most of the concurrent sessions at TCEA 2008 are **Super Sessions** with room for more than **200 participants**. We offer more than 140 workshops and 300 concurrent sessions on subjects that range from the basics to the latest trends and hot topics. We have **something for all educators** who want to increase their skills and learn more about how to integrate technology into the classroom.

#### More Exhibits

Over 700 Exhibit Booths showcasing cutting-edge educational technology

#### Inspiring Speakers

**Opening Keynote, Sally Ride**, Former NASA Shuttle Astronaut and Mission Specialist

**Thursday Speaker, David Pogue**, Personal-technology Columnist for the *New York Times*

**Friday Keynote, Marco Torres**, Outstanding Educator

#### Texas-Sized Events

Austin City Limits with Texas' Official State Musician, Shelley King, and Thursday Social featuring the band, "Texas Unlimited"

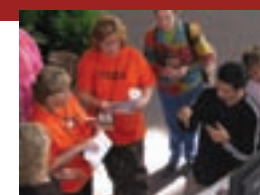


Keynote Speakers Dr. Sally Ride and Marco Torres

Photo Courtesy CAIB, Rick Stiles 2003

**Texas Computer Education Association**  
**28th Annual Convention & Exposition**  
**Feb. 4-8, 2008 • Austin Convention Center**

[www.tcea2008.org](http://www.tcea2008.org)



# QA



**Steven Enoch,**  
Superintendent  
of Schools,  
San Juan Unified  
School District,  
Sacramento, Calif.



**Mark D. Boughton,**  
Mayor,  
Danbury, Conn.

**Q:** What is your favorite definition of “innovation”?

**A:** Innovation is that rare quality in people that makes them presumptuous enough to believe that all is possible and bold enough to engage in action plans built on the concept of “ready, fire, aim.”

**A:** I believe that innovation is the melding of creativity with efficiency. Too often we dismiss things as not possible. The innovator is someone who achieves success within a defined framework to accomplish a task in a new and different way that blends creativity and efficiency.

**Q:** Who has inspired you throughout your career?

**A:** Ron Edmonds (former director of the Center for Urban Studies at Harvard University). While I never met this researcher and educator, I have had his message about the “educability of all children” framed and posted wherever I have worked for almost 30 years.

**A:** As an educator I have been inspired by those that bring care, compassion and creativity to their calling. In particular, Dr. James Walsh, a professor I had at Central Connecticut State University, and the many outstanding teachers I had in the Danbury Public Schools District.

**Q:** What do you think should be done to foster creative thinking and innovation in today’s students?

**A:** We need teachers and administrators who personally model creative thinking and innovation, technology-enhanced curriculum that promotes it and authentic assessment systems that value, not discourage, innovation and thinking. Thoughtful, reflective writing assignments are still one of the best avenues for fostering creative energy in our students.

**A:** Teaching is an art, yet we use techniques that are dictated by Byzantine rules and regulations that date back to the early 20th century. Free up scheduling, encourage high standards with creative thinking, emphasize in-depth analysis and develop scheduling models that allow more than just a glance at higher-order thinking.

**Q:** What do you read for inspiration (or what are you reading now)?

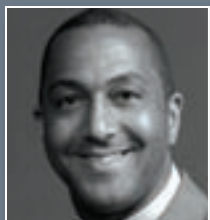
**A:** I enjoy reading about the lives and work of those whose wisdom, perseverance and inspiration I can learn from. Recently these have included Jack Welch’s *Winning*, and the story of Ishmael Beah in *A Long Way Gone*. Professionally, I recommend *On Common Ground*.

**A:** I just finished *Team of Rivals* by Doris Kearns Goodwin. It’s a great book and as a leader in the 21st century, there’s no better inspiration.

**Q:** What is the most innovative educational program you have seen?

**A:** We recently reconstituted an underperforming middle school filled with students rich in diversity of race and language, but sharing the common denominator of poverty. We recruited a new staff committed not only to every student learning at high levels, but to teaching and learning in a new wireless environment with a laptop for every student.

**A:** The best models are ones that move students in profound ways. High standards are balanced with creativity and a sense of community. I am most impressed with some of the magnet schools in Connecticut. We also have a strong charter school program in New Haven called the Amistad Academy.



**Alvin Crawford,**  
Senior Vice President  
of Corporate Marketing  
and Development,  
SchoolNet



**Robert J. Rennie, Ph.D.,**  
Vice President of  
Technology and Chief  
Information Officer,  
Florida Community  
College,  
Jacksonville, Fla.



**Colleen Crongeyer,**  
Student, 16,  
Garden City High School  
Garden City, Mich.

**A:** Peter Drucker's definition: Change that creates a new dimension of performance.

**A:** My favorite is the Disney term: "Imagineering." To me it means conjuring up a vision of new possibilities and then causing the vision to be realized. True innovation takes creativity, problem solving, passion, commitment and courage to achieve — it is the result of complex thought and hard work.

**A:** My favorite definition of innovation is along the lines of bringing something new to an environment to make a difference or possibly improve the situation.

**A:** I often think about how important marketing communications are and how I can impact the world through marketing. Several forms of marketing, good or bad, have transformed our country, won elections, started wars and ignited a global economy. I'm inspired to leverage the potential of marketing communications to do great things.

**A:** My grandfather, who was a brilliant engineer. Winston Churchill, who was a phenomenal thinker and leader, and Steve Jobs, who just gets it.

**A:** My mother is my greatest inspiration because she's the hardest working person that I know. She's taught me how to be devoted and put as much effort as possible into what I do.

**A:** Students growing up in the multimedia world we live in are inspired daily, just not necessarily in school. We need to transform classrooms into places that encourage creativity rather than stifle it. Many teachers lack a base level of technology readiness; teachers' colleges need to step up to that task.

**A:** Every student should be required to take music, art, and Aristotelian logic and read UCLA professor extraordinaire Moshe Rubinstein's book (and take one of his classes if at all possible).

**A:** More student activities should be available, such as more music and sports programs. I started doing concerts with my band at schools in my district to try and raise money for school sports since we might not have them because of a deficit.

**A:** I'm reading two books that are forms of inspiration: *Teach Yourself Dutch*, and a series on fatherhood. My new wife is from Amsterdam and we're expecting a baby girl very soon. Life brings about many inspirations.

**A:** I read a variety of books and magazines, including books on history and science, and *Scientific American* and *Wired* magazines. I just reread David McCullough's *John Adams* and I am now reading David Berlinski's *A Tour of the Calculus*.

**A:** I'm not much of a book reader, but I listen to all kinds of music and I love thoughtful lyrics. They intrigue me because of the power they can have. I love lyrics that have metaphors and make you think, and also the ones that have great stories behind them.

**A:** Alan November spoke of a program during the 2006 EduStat Conference in New York. He spoke about a blog that a Detroit-area middle school teacher uses to work with students on writing assignments. Students submit essays to the blog and comments come from people all over the world.

**A:** Scott McNealy's pet project "Curriki" is certainly at the top of the list. It facilitates the creation and sharing of exceptional learning resources and curriculum in a community-based model. It really does have the power to cause significant positive change throughout the world.

**A:** I think that having Channel One News shown at school is great because it lets students know what's going on in the world today and also gives them ways they can help their community.



# Search and Electronically Discover

What eDiscovery Regulations Mean for Schools.

**L**egal preparedness is an increasingly important responsibility for a school or district's information technology department. In today's education environment, the scope of the information technology department must expand to incorporate electronic discovery requirements. The December 2006 amendments to the Federal Rules of Civil

Procedure mandate changes in the way organizations, including education institutions, manage their data. IT needs to have detailed knowledge of what information is retained, where data is stored and how long to keep it. The IT department also needs to have the ability to quickly and accurately respond to litigation hold notices. Schools and districts could ultimately save

millions of dollars with the establishment of the correct processes and procedures for data retention. The implementation of automated solutions to ensure compliance would improve search and retrieval speed and increase user productivity.

## Schools' Responsibilities

K-12 schools, colleges and universities routinely handle large volumes of sensitive records. With paper records, most have found appropriate balances among safeguarding personally identifiable information, public disclosure and academic freedom. The management of electronic or digital records ought to reflect the same balances.

Education institutions are now responsible for e-mail, instant messages, text messages and all forms of digital files (music, pictures and video) shared using an institution's resources across all forms of digital media. This includes, but is not limited to: CD-ROMs, DVDs, tape back-ups, hard drives, USB flash drives and network storage devices.

The changes to the Federal Rules of Civil Procedure (FRCP) formally recognize electronic records as a category of documents that are subject to discovery during litigation. In summary form, the amended FRCP codifies the rules for electronic discovery; including the requirements for the accuracy, chain of custody and availability on demand. The FRCP now requires that every electronic document stored by a school or district, such as e-mail, instant messages, accounting databases, voicemail and all text and graphical documents be retrievable in a "reasonable" amount of time.

**Schools and districts could ultimately save millions of dollars with the establishment of the correct processes and procedures for data retention.**

If an organization cannot produce the record itself in a timely fashion, it must be able to identify and document the location of the record. If an organization chooses to not comply with the new rules, monetary penalties could be assessed that no public entity could reasonably or responsibly absorb.

Records management is not a new concept for educational institutions, but with ever-growing digital communication traffic, the search for one e-mail among millions changes the way the data-storage game is played.

### **What it Means for Schools**

More and more primary schools, colleges and universities have incorporated digital technologies into the management of their institutions; including interactions with students, parents, faculty and third parties.

Reconciling existing practices with the new guidelines for eDiscovery begins with a policy review. According to an Enterprise Strategy Group research report, 63 percent of responding organizations said they needed the ability to set different retention policies based on content or source to comply with the new rules. Close to one-half of the public- and private-sector respondents said their organization has been involved in a legal proceeding or regulatory inquiry that necessitated the search for and retrieval of electronic records. However, a separate report indicates that a majority of K-12 IT administrators do not have clearly set district policies regarding electronically stored information.

### **K-12 Still Unclear**

Nearly 80 percent of IT administrators at K-12 organizations are still unclear about their district policies for the retention of electronically stored information, including e-mail, according to findings of a June 2007 CommVault survey.

Approximately two out of three responding IT managers and administrators responsible for managing backup data and archived messages indicate they are aware of the amended rules, but 90 percent of schools have yet to initiate an FRCP compliance preparedness plan at this time.

**The FRCP now requires that every electronic document stored by a school or district, such as e-mail, instant messages, accounting databases, voicemail and all text and graphical documents be retrievable in a “reasonable” amount of time.**

Overall, the survey results demonstrate a marked disconnect in school district awareness of the issues surrounding FRCP rules and the legal discovery preparedness of school districts. While most school districts are fully aware of possible ramifications, many have yet to establish policies to address electronic discovery for schools. By not appropriately complying and managing their eDiscovery and archiving according to federal policy, district administrators are exposing their school districts to costly litigation risks.

### **The Next Step**

A review that compares existing policies with the requirements of the new eDiscovery guidelines is a necessary precursor to increasing organizational awareness about records management. This means making administrative changes to help ensure compliance and efficiency in the management of both paper and digital records.

Second, an educational entity must look at retrieval methods. This involves a review of the organization's capacity to archive and retrieve records timely and with ease. To that end, IT departments should prepare a detailed inventory of data assets, systems, retention policies, backup strategies, employee termination protocols and any other aspect that could affect the discovery process. The policy and technology reviews, taken together, can then form the basis for selecting and implementing new archiving and eDiscovery tools as needed.

As daunting as this process appears, the consequences of not acting – or acting in half

measures – comes at considerable cost, as a recent occurrence in Florida demonstrates.

### **The Cost of Noncompliance**

Hillsborough County Public Schools recently found itself face-to-face with the new data retention guidelines.

The Florida district was involved in a court case involving e-mail blocking. As part of the eDiscovery process, a nonprofit organization had requested every e-mail that had a spoofed e-mail address received by every account in the past year. It was no small request; the district receives more than 50 million e-mails each year – that works out to roughly 300,000 per day, of which 100,000 were blocked.

In the past, the district had archived only e-mail to and from elected board members but not all employees. That is changing. According to Jack Davis, chief information and technology officer for the district, and Rick Laneau, data center manager, the district will be archiving all e-mail now as a result of the FRCP changes. “It’s a sweeping requirement,” Davis said.

It does not end there. The new regulations require organizations to produce documents in their original form – meaning that something created electronically must be archived and retrieved electronically. Davis and Laneau agree that education institutions will have to do more than a cursory review of their business practices to understand the implications of the new rules. In fact, the Hillsborough County district has formed a committee to address archive requirements: to understand what

must be retained and what can be deleted under the new guidelines. Among the early findings was that the district had an acceptable-use policy for students and district employees but lacked an outward-facing policy about the kind of e-mail that will be allowed through the district's spam filter.

The Hillsborough district subsequently purchased electronic archive and discovery technologies and is in the process of implementing that solution to begin a comprehensive archiving process.

Laneau called ramping up for the new regulations costly, but added that "based on our most recent experience, you want to pay for the cost of compliance rather than the cost of noncompliance. If you can't produce the documents, you're legally vulnerable. We're going to maintain the ability to produce the documents."

With this experience behind it, the district plans to address the archiving of individual electronic documents, as well as instant messages and voicemails. "We want to move in that direction but we're not there yet," Davis said.

Central to the Florida experience was a careful review of policy and practices, which are necessities in making decisions about technology and tools.

### Keeping it Relevant

The new eDiscovery archiving methods are expected to be widely enforced by the end of 2007. Ensuring compliance with the new FRCP guidelines is a reason to begin looking at archiving programs, but the operational advantages are a reason to use them every day. Preparing for the enforced changes allows K-12 and higher education institutions to take control of important business knowledge scattered across their networks. Electronic discovery and archiving systems allow schools and colleges to readily assess potential risk and liability for all kinds of matters. A school or college that cannot rapidly and defensibly find relevant electronic files will face escalating legal costs and unnecessary disclosure of vital documents.



## What about the States?

While schools are becoming aware of the changes in the federal rules, many states are modifying their eDiscovery policies.

### Texas

Texas was the first state to enact eDiscovery rules, having added pertinent sections to its Civil Procedure code in 1999.

### New Hampshire

New Hampshire Superior Court Rule 62 was amended March 1, 2007 to require discussion of key eDiscovery topics at meet and confers consistent with the amendments to the FRCP.

### Idaho

Idaho amended the Idaho Rules of Civil Procedure effective July 1, 2006 to include provisions modeled on the 2006 FRCP Amendments.

### District of Columbia

The Superior Court for the District of Columbia is currently in the process of revising its local rules to include the FRCP eDiscovery amendments.

Source: <http://www.lexisnexis.com/applieddiscovery/LawLibrary/StateCourt.asp>

Electronic discovery and archiving are about more than keeping old e-mails and files. They are about giving a school, district or higher education institution the ability to gather and produce relevant information.

In court, divulging more information than requested is unnecessary and can lead to problems. It is critical an organization be able to discover and produce that which is relevant – and only that. ●

Continued from page 19

doing this for a while, but the new concept of the comprehensive high school is really an exciting one for me.

One of the things we're seeing now is that students who get their associate degrees are getting higher wages when they go to work than those getting a four-year college degree. This is clearly showing the need for those technical skills. That's what you're finding the community and technical colleges doing and that's where the jobs are going to be in the 21st century.

**Q: Joanne, please discuss some of your college's projects in rural West Virginia.**

**JT:** I am a true community college advocate and one of the greatest things about community colleges is the fact that they have great flexibility. We have the ability to get a program started quickly and respond to a need. That's something that four-year colleges and universities' missions don't always allow for. We have been able to really do some innovative things in southern West Virginia through the college. Technology runs through everything. At this institution, we do online and Web-based courses. We have wireless networks for students, our library is highly technological and we have faculty members that do podcasting. They put their lectures on iPods that students can download. We have all of that technology.

We also purchased a motor coach that has computers on it and we can take basic education classes directly to a business, to churches or offices, and do instruction right at the site. Also, we were actually one of the first colleges in West Virginia to have audio and video interactive classroom systems. Because we're in such a rural part of the state, with people that are economically disadvantaged and very spread out, we have four campuses and four sites in 11 counties. The interactive classroom connects our four sites. We most recently connected to all the high schools in our service districts. So we have 17 two-way audio interactive connections. This is a great tool, not only for college students. You save in terms of dollars,

## Converge Exclusive on Being a First Lady

"The unique thing about being a first lady is there is no job description. Each first lady brings to that role her own personality, her initiatives. Among my peers, one of the first ladies that I have always admired in West Virginia is Sharon Rockefeller. One of the things she did in West Virginia was create Mountain Artisans for the great artisans and craftsmen that we have here in West Virginia, particularly in the art of quilting. She took something that had just been a culture and turned it into a very thriving industry. Those initiatives that lift up the people of West Virginia, that provide opportunities that continue over the long haul, to me are just wonderful inspirations."

having one instructor available to many sites. But it is also enabling high school students to get college classes or dual-credit classes. It really provides for that seamless type of education, saving dollars through technology.

I'm sure most people know and are very aware of all the mining disasters that have happened in the country over the past year. The state and the federal government are now looking at mine safety standards. We have an academy for mine training and energy technology. This is hands-on, state-of-the-art instruction using computer simulators to do teaching, specifically surrounding safety in the mining industry. One of the neatest things that it has enabled the college to do is to purchase a mobile command center that has all the high-tech equipment. Students can have hands-on computerized technology training at any location.

**Q: Joanne, do you think the students at your college are different today than they were 10 years ago? How?**

**JT:** Community colleges are a good mix. We have traditional students coming out of the K-12 system, but we also have a lot of adults. The adults have been out of there and out in the workforce for a while. I do find, in some respects, students today, whether adult or traditional, are different. The obvious one is the fact that they're more technology-savvy. They have more information thrown at them in a day's time than I ever thought would be thrown at me in my lifetime. They have to think globally, and technology certainly has made them different in that respect. Students learn from the Internet, not always from a book anymore. That makes us have to change what we do in the classroom. We have to keep up with their technology savvy.

There are some things other than technology that I think have not changed. One of the things that I do think is different with students today than when I was in

school is that they are not as civic-minded as they were once before. They're not as engaged in community service as they once were. I find that at our campus; I may not be able to speak for others. The other thing that I think is very similar is students are finding it difficult financially to attend college. Community colleges are far less expensive or more affordable than most. The cost of a college education is an issue for students and an issue for the future of higher education. Technology has definitely changed students and perhaps has affected that ability to have more social skills and be more civic minded today.

**Q: In your experience with education, what have you heard students describe as their vision for the future of education?**

**GM:** The governor and I recently did a roundtable discussion with a group of West Virginia's best and brightest students. It was the Governor's Honors Academy, a program that is held for a few weeks during the summer. What we found to be very, very interesting was their insight into the need – in the United States and in West Virginia – to start foreign languages in kindergarten. They demonstrated a desire for us to give students at a younger age more access to not only their core structure, but what will be needed for their career path. They had some wonderful ideas in terms of that when they thought about education. It's all about starting earlier, starting younger, and they need more choices and more access. The kids of today are sending a very clear message in terms of what they see the educational arena looking like in the 21st century, and it is not a cut-and-dry model, not one-size-fits-all. It's a very expansive, empowering model that allows children and adults alike to grow at their own pace, in their own way, on their own time. I think that's pretty exciting for the future of education. ●

BY JAMES MERO

## Student Info

**Name:** James Mero

**School:** Pioneer High School, Ann Arbor, Mich.

**Grade:** Senior

**Age:** 17

# Fingerprint Operated

## 2007: Accessible Lessons

The school bells sound early in the morning. Kids walk the halls like ghosts; most of the students are hardly awake. Others are lively with avid conversations of what they did the previous night, and as the bells sound again they stumble into their respective classrooms to their desks and lab tables to enjoy another strenuous day of school. At my high school the technology is a bit more advanced than your typical school. Each class is equipped with one hanging projector and a surround sound system. The surround sound system is attached to a wireless microphone that hangs around the teacher's neck in order to amplify his or her voice. In theory this microphone sounds like a good idea, but in reality it's really quite unnecessary considering the teacher isn't performing for crowds or giving a big college lecture.



There will be an increased focus on understanding and working together worldwide so group projects will consist of students who are located around the world.

student will have a file to save notes and assignments. Each student will be able to access his or her own file from home using a username and password. Students will also be able to keep other things in their file like career pathways, possible colleges and information on extracurricular activities. These things will be easily accessible when it is time to talk to the student's counselor about future plans. There will be an increased focus on understanding and working together worldwide so group projects will consist of students who are located around the world. Most books will be online and preferably read to us in the voice of our choosing so the kids of the future won't start out with bad backs because they carried 40 pounds of books around everyday. There will be another information explosion so students will be taught how to find and analyze data not to memorize it.

All lockers will be fingerprint operated. A locker will be assigned to each student

## Students will be taught how to find and analyze data, not to memorize it.

You can pretty much hear the teacher from anywhere in the class without the mic. The projectors that were added a couple of years ago seem to be working out very well. They allow for TV, video or PowerPoint presentations to be shown on a large screen, making lessons more visible to the entire class. My high school also has several groups of Apple iBooks that circulate through the school. The laptops allow the class to surf the Web without wasting the time it takes to go to a computer lab. The rest of the technology used at my school is mostly brought from home.

Some is required, like graphing calculators, and some is brought for students' personal enjoyment, like cell phones and iPods.

## 2057: Fingerprint Operated

Schools in the future will leverage the latest technological advancements. Each desk will contain a flip-out touch screen monitor, allowing students to access the Internet (at times deemed fit by the teachers of course), follow PowerPoint presentations, take notes and work on projects. The monitors will be hooked into a main database where each



# send us your Big Ideas

The power of an idea can change the world. A goal of education is to inspire powerful ideas. *Converge Magazine* is pleased to announce the *Converge Big Book of Ideas*.

This special issue of the magazine will focus on creating social change and feature effective and innovative ideas to change the future of education.

*Converge* is accepting nominations for inspirational people, schools, districts, books and ideas that are changing education.



Send ideas or nominations  
to Jessica Springgay at  
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### All lockers will be fingerprint operated. Fingerprints will also be used to check out books and buy food.

at freshmen orientation. The student will register his or her fingerprint, which will then be sent to the assigned locker. Lockers will actually be big enough to put a coat in. The student will have that same locker for the duration of high school. Fingerprints will also be used to check out books and buy food. Books will be equipped with Global Positioning Systems (GPS) so students can cut down the time they spend looking for them. Fingerprinting will be a better method than using a student ID because an ID is easy to lose and can be difficult to confirm students' identities. Students will use their fingerprints to buy lunch in order to maintain a healthy diet. They will have a maximum amount of points they can purchase everyday. The less nutritious the food item the more points it equals. If the student's lunch exceeds the limit of points per day then the student will be forced to return enough items so that they are below the maximum. Ok, I just threw that one in for the moms. The use of fingerprints will eliminate the need to bring money to school and should cut down on crime. I wonder if the bullies will drag my finger with them in order to get a free lunch?

The process of feeding students will be greatly improved. Segments of the cafeteria floor will rise up to form tables at the push of a button. Large slabs of marble stools will

pop out of the sides of these. The tables are designed to ease the process of cleaning the entire lunch room. It is also an easy way of clearing out the lunch room for dances, meetings and other gatherings. Every table will be attached to a main grid that will allow the tables to be raised at the same time, or designated tables allowing for a much quicker and more organized preparation for the lunch period.

Class registration will be completed online and will be highly interactive. Classes will be matched up to students' choice of colleges or other career paths so they can

### Classes will be matched up to students' choice of colleges or other career paths so they can immediately see if they are on track to meet the entrance requirements.

immediately see if they are on track to meet the entrance requirements. Students will be able to view school requirements they have yet to fulfill and thus pick classes with that information in mind. There will be a list of available classes that they can take and they will choose from that list. If the demand for a particular class is greater than the number of classes available, the system will alert administration so they can adjust the schedules. Students will be able to see everything the school has on file about them, including their class schedule, transcripts, recommendations and other achievements. All forms will be updated online so no more big piles of paper will have to be filled out at the beginning of the school year. Students will be able to pay for yearbooks and missing

#### Fast Fact

Located across the street from the University of Michigan's "Big House" stadium, Ann Arbor Pioneer High School students are inundated with college life.

books with a credit card using their fingerprints to identify themselves.

All homework will be assigned online and will be short enough to complete within 45 minutes. Assignments will be graded immediately and provide suggested areas of study for those parts of the assignment that are incorrect. Projects will be limited to two per year and tests will be limited to

four per semester. Teachers and students will be matched on their learning and teaching styles. Teachers will also teach based on their knowledge and interest in the subject. This will prevent teachers from being assigned to classes they are not interested in, which shows in their teaching.

Technology has helped to make our lives easier. Sometimes it takes giant leaps and bounds; other times it appears to be at a standstill. One thing is certain: Our children will think wireless laptops are just as hokey as we think our parents' manual typewriters are. ●

#### Ann Arbor Pioneer High School Wins a Grammy

Pioneer was designated the National Grammy Signature School for 2006. This award means that Pioneer's music program was deemed the best in the country by the Grammy Foundation.

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# legislative landscape: math and science

**M**ath and science are not always viewed as the fun subjects in school. However, today these classes have new meaning for students. The roads of math and science lead to many of tomorrow's careers and students today have a greater need to learn about things like nano-technology and automotive engineering. Most states recognize the call

for a revamp in math and science classrooms and are putting their money where their students are. Following is a look at the steps states have taken to enhance the teaching skills of math and science instructors, as well as to provide students the opportunities to become mathematically and scientifically literate citizens and the STEM workforce of tomorrow.

State	The Legislation
<b>Alabama</b>	<p><b>Initiative:</b> Alabama Math, Science and Technology Initiative (AMSTI)  <b>Summary:</b> Gov. Riley's AMSTI seeks to improve math and science teaching statewide. In order for a school to become an AMSTI school, math and science teachers at the school must attend two weeks of training for two consecutive summers at AMSTI Summer Institutes. In return, they are provided all the math and science equipment and materials needed for hands-on activities in their classrooms. Four years ago, the program received no state funding. The budget for fiscal year 2008 includes \$35.8 million for AMSTI. With the increase, 589 schools will become AMSTI schools.  <b>Source:</b> <a href="http://www.governorpress.alabama.gov/pr/pr-2007-07-09-01-amsti-photo.asp">http://www.governorpress.alabama.gov/pr/pr-2007-07-09-01-amsti-photo.asp</a></p>
<b>California</b>	<p><b>Initiative:</b> EnCorps Teachers Program  <b>Summary:</b> In June 2007, the governor announced a \$12 million investment to establish the EnCorps (pronounced encore) Teachers Program that will put more than 2,000 new teachers into math, science and career technical classrooms over the next two years. The program will bring retirees into California classrooms by partnering with private companies to recruit, train and place employees who want to become teachers after retirement.  <b>Source:</b> <a href="http://gov.ca.gov/index.php?press-release/6619/">http://gov.ca.gov/index.php?press-release/6619/</a></p>
<b>Florida</b>	<p><b>Initiative:</b> Florida Math and Science Initiative  <b>Summary:</b> This new initiative will fund the creation of the Florida Center for Research in Science, Technology, Engineering and Mathematics and the establishment of the Office for Math and Science in the Department of Education. It is funded with a \$2 million grant from the Florida Legislature. Florida State University will oversee the research center.  <b>Source:</b> <a href="http://www.flgov.com/release/8649">http://www.flgov.com/release/8649</a></p>
<b>Iowa</b>	<p><b>Grant:</b> State of Iowa's Department of Education grant  <b>Summary:</b> A \$200,000 grant to improve student learning in science, technology, engineering and math (STEM) in the Cedar Rapids/Iowa City corridor. The grant is intended to develop a model for enhancing student learning in STEM that can be expanded statewide. The program will include after school and summer learning opportunities for students.  <b>Source:</b> <a href="http://www.iowademocrats.org/ht/display/ReleaseDetails/i/1046302">http://www.iowademocrats.org/ht/display/ReleaseDetails/i/1046302</a></p>
<b>Minnesota</b>	<p><b>Grant:</b> National Governors Association grant  <b>Summary:</b> The National Governors Association (NGA) awarded Minnesota a \$500,000 grant that will be used in conjunction with \$3 million in state funds for the creation of Math and Science Teacher</p>

State	The Legislation
	<p>Academies. During the 2007 legislative session, Gov. Tim Pawlenty proposed, and the legislature approved, funding for the creation of regional Math and Science Teacher Academies throughout the state.  <b>Source:</b> <a href="http://www.governor.state.mn.us/mediacenter/pressreleases/PROD008223.html">http://www.governor.state.mn.us/mediacenter/pressreleases/PROD008223.html</a></p>
<b>New York</b>	<p><b>Grant:</b> State Education Department grant  <b>Summary:</b> The New York State Education Department distributed just under \$2 million in grants to colleges and universities throughout the state under the "Summer 2007 Classes and/or Institutes for Teachers in Mathematics and/or Science" program. This grant program funds 50 percent of the costs of teachers attending university or college-based summer classes or institutes. The classes must be designed to improve the teachers' professional content knowledge and to refresh their ability to apply state-of-the-art technology in the areas of math or science. Almost \$500,000 in grants went to community colleges throughout New York under the "2007 Summer Mathematics and/or Science Programs for Middle School Students" program. These grants support improved achievement of middle school students in math and science through hands-on, engaging summer programs.  <b>Source:</b> <a href="http://www.oms.nysed.gov/press/Math-ScienceGrants2007.htm">http://www.oms.nysed.gov/press/Math-ScienceGrants2007.htm</a></p>
<b>Pennsylvania</b>	<p><b>Initiative:</b> Science: It's Elementary  <b>Summary:</b> Through the initiative, innovative science teaching will be offered to nearly 57,000 students in more than 120 school districts across the state in the 2007-08 school year. Science: It's Elementary goes beyond traditional textbook instruction, allowing elementary students to learn by doing. Classrooms are provided with science kits enabling children to experiment and see the "big picture" of how science impacts lives. The recently enacted 2007-08 budget allocated \$13.5 million to expand the initiative to an additional 25,800 students in the coming school year. Last year, Science: It's Elementary benefited almost 31,000 K-8 students in 65 school districts.  <b>Source:</b> <a href="http://www.pdenewsroom.state.pa.us/newsroom/cwp/view.asp?a=3&amp;q=128719">http://www.pdenewsroom.state.pa.us/newsroom/cwp/view.asp?a=3&amp;q=128719</a></p>
<b>Virginia</b>	<p><b>Grant:</b> National Math and Science Initiative grant  <b>Summary:</b> Virginia was awarded one of the first grants from the National Math and Science Initiative's (NMSI) Advanced Placement training and incentive program. NMSI is a new nonprofit organization established to help America maintain its global leadership position in technological innovation. The grants will each provide up to \$13.2 million over the next six years to state nonprofit entities to help fund training and incentive programs for AP and pre-AP courses.  <b>Source:</b> <a href="http://www.governor.virginia.gov/MediaRelations/NewsReleases/viewRelease.cfm?id=488">http://www.governor.virginia.gov/MediaRelations/NewsReleases/viewRelease.cfm?id=488</a></p>

# grants and initiatives

“As we prepare for a more competitive global future, Minnesota’s future job growth will be largely in the science and high-tech fields, and teachers who participate in these math and science academies will provide students with a more rigorous and relevant learning experience.”

Minnesota Gov. Tim Pawlenty

“We need specialized environments for students who are especially gifted or just especially interested in particular areas of study — like advanced math, bioscience, information technology, civics and language.”

Arizona Gov. Janet Napolitano

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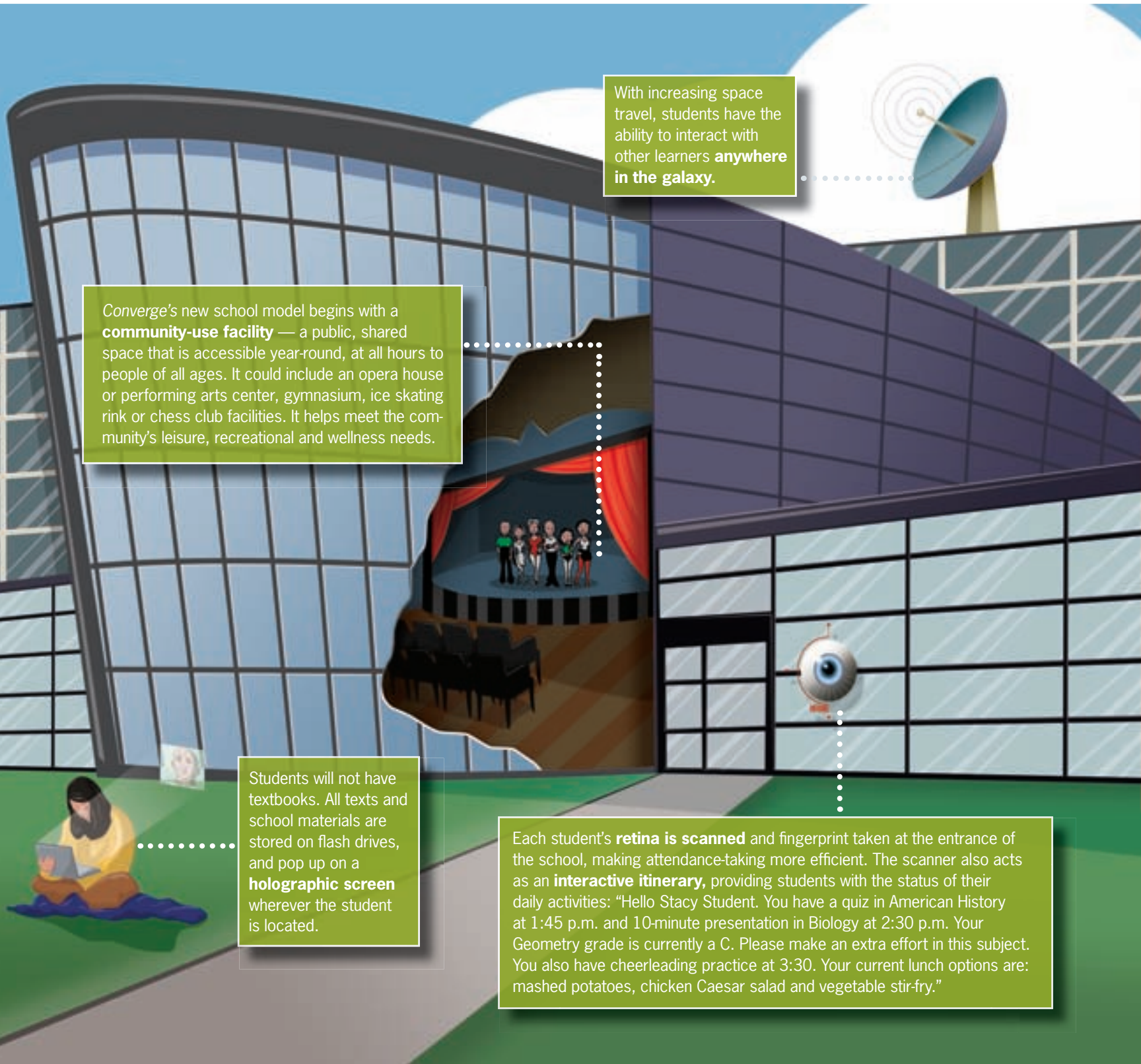


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Students will not have textbooks. All texts and school materials are stored on flash drives, and pop up on a **holographic screen** wherever the student is located.

Each student's **retina is scanned** and fingerprint taken at the entrance of the school, making attendance-taking more efficient. The scanner also acts as an **interactive itinerary**, providing students with the status of their daily activities: "Hello Stacy Student. You have a quiz in American History at 1:45 p.m. and 10-minute presentation in Biology at 2:30 p.m. Your Geometry grade is currently a C. Please make an extra effort in this subject. You also have cheerleading practice at 3:30. Your current lunch options are: mashed potatoes, chicken Caesar salad and vegetable stir-fry."

The school of the future is an ideal, student-centered, standards-based educational setting — a collaborative, interactive environment that brings teachers, students and technology together.

Classrooms feature **telepresence stations** that combine rich audio, high-definition video and interactive elements to create a live, face-to-face experience so students can collaborate with other “new schools” as easily as if they were in the same room.

The “**think tank**” area features bean bag chairs for student-generated content brainstorming.

The **mad science center** features digital microscopes and probes, laser thermometers, an autoclave and incubator, an interactive whiteboard, wireless microphone, laptops and analytical software.

The English and language arts area will have resources available in a variety of mediums: print, digital video or interactive programs. Foreign languages would be practiced by interacting virtually with students from other nations.

The traditional classroom features **multimedia and project-based collaborative workstations**, dictionaries and a “guide on the side” instructor.

Students’ lockers will have **touch-screen Internet capabilities**. All students will have the option of using an avatar — a Web-based version of the student — to help them keep track of assignments, after-school activities and busy schedules.

# Infotopia:

## How Many Minds Produce Knowledge

REVIEWED BY MISSY RATERMAN

In today's fast-paced and insta-mobile economy, do you believe in the perfect balance of sending and receiving all the necessary information life requires? Whether you are in the office, at home or enjoying the free time you've managed to carve out of your otherwise over-committed daily schedule, you're receiving and releasing information into a vast communications network, confident in your transmittals. However, in all your running around, from

*Infotopia* serves as an excellent addition to the theoretical discourse already existing on topics of information aggregation in the shadows of 21st century technology. *Infotopia* is shedding light on the cracks.

Throughout his book, Sunstein guides readers through various information acquisition mechanisms, discussing the pros and cons of statistical groups, deliberating groups, projection markets, wikis, blogs and open source software in the pursuit of

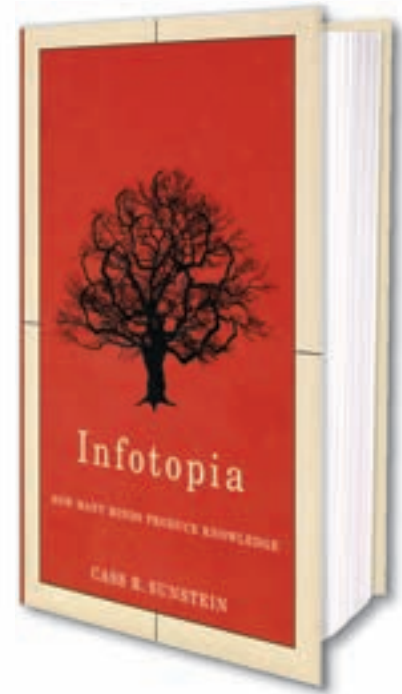
**We can control the information we seek and are privy to, as well as the manner in which we choose to share this information with others.**

meeting to meeting and from errands to home, have you sat back and considered the quality of the information you have streaming through your BlackBerry, coming through your stereo or broadcasting through your TV connection? Do you know if you're a false deliberator? Are you a culprit of the "Daily Me"?

The Daily Me (a term first introduced in the early days of the Internet by Nicholas Negroponte) is a concept discussed by Cass R. Sunstein, a law professor at the University of Chicago, in his book *Infotopia: How Many Minds Produce Knowledge*. Sunstein states, "The Daily Me is a genuine opportunity, or risk, for some of us, with occasionally unfortunate consequences for businesses and democracy alike. The problem involves information cocoons: communications universes in which we hear only what we choose and only what comforts and pleases us." This is the quintessential dilemma of utopia — life is beautiful so long as you refuse to question it or to seek out the cracks in its infrastructure.

obtaining "right" information. In Sunstein's proposed utopian view, wikis and projection markets would produce more of our information, and deliberation (including the deliberators that we turn to when we just don't have the time) would be re-imagined, so as to instruct participants in the process of how to encourage the sharing of pertinent information rather than protecting it. Voices like Sunstein's remind us that while society is advancing at a pace that seems uncontrollable, we can at least control the information we seek and are privy to, as well as the manner in which we choose to share this information with others.

Whether discussing the use of information in political decision-making, social opinion or commercial marketing, Sunstein remains true to the initial thesis of his work, which is to propose an explanation to the question: "How can many people be wrong?" If you've ever found yourself shouting in the face of giants, you will understand the impetus to decode this dilemma.



In the conclusion of *Infotopia*, Sunstein recognizes the potential for optimism and pessimism regarding our production of knowledge in the Information Age. He says, "Far more than ever before, humanity has promising methods for seeking out widely dispersed information and creativity for aggregating these into uncannily productive wholes. The ultimate value of the new methods depends, of course, on how we use them." That being said, *Infotopia* is a useful read for those of us living in the information economy without the luxury of time to step far enough away to analyze our predisposed understandings. We all need to be reminded that just because you read it somewhere, it doesn't make it true; and the information we send into the world does create the realities in which we live. ●

### details:

By Cass R. Sunstein

Publisher: Oxford University Press, Inc., 2006

Price: \$25.00



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## Innovations – Which Ones to Nurture?

*There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. – Niccolo Machiavelli*

This issue of *Converge* explores innovative school models. There are numerous acts of innovation in our educational institutions, many based on the implementation of advanced technology. How do we evaluate and determine which acts of innovation are worth nurturing and which are not? Perhaps looking into our historical heritage may be of value.

The strength and power of the United States is based on the strong foundation on which our country is built – the U.S. Constitution. As author Dave Kluge put it, the Constitution “... lays out the basic rules of the game for people who want freedom for themselves and for others.”

To find the basic rules of the “education game,” I turned to the 1828 edition of *Webster’s Dictionary*. There I found a definition that says education helps fit students “for usefulness in their future stations.” This concept is basic to fully understanding our role as educators, and brings in two further points that must be considered:

1. How do we help our students truly determine, with a sense of purpose and certainty,

what their future stations in life could and should be?

2. The need to determine what educational innovations will truly align with this concept.

Many years ago I met someone who was involved with a technological innovation. He was enthused about the product and said it would truly revolutionize the educational system. I was greatly intrigued and most interested in finding out what the product was and did. The product was the overhead projector. Why would it revolutionize education? It would allow teachers to write while facing the students to see their reactions and help to prevent behavioral problems.

A useful and helpful innovation, to be sure, but not one that would truly revolutionize education.

There have been so many false promises and poor results from innovative tools and approaches that educators have become somewhat leery. Mark Twain likened educational reform to moving a cemetery, observing that it’s difficult to persuade the inhabitants to pick up and move. How should educators determine which acts of innovation should be nurtured? Against what standards do we evaluate the success, value and effectiveness of these innovations? One answer: Determine how they measure up to the fundamental definition and purpose of education as written in the 1828 edition of *Webster’s Dictionary*. ●

There are numerous acts of innovation in our educational institutions.



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A photograph of two young boys in a library. One boy, wearing a yellow shirt and white pants, is sitting on the floor and looking at a laptop. The other boy, wearing a red shirt, is kneeling next to him, pointing at the screen. They are surrounded by bookshelves filled with books.

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An education that's  
much more than the 3 Rs

What can we do to help kids learn, grow and achieve? That's the question K-12 education professionals are always asking. At Alcatel-Lucent, we're helping to answer it. We teamed up with the Cheltenham Township School District in Pennsylvania and built a customized communications network to help them meet their education goals. Super fast Internet speeds online research. Distance learning connects students and teachers around the world. Video streaming brings new resources to the classroom. And of course, improved communication helps make schools more secure and keeps everyone safer. So when it comes to giving kids the tools they need to succeed, Alcatel-Lucent has you covered from every angle.

**Because the world is always on.**

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