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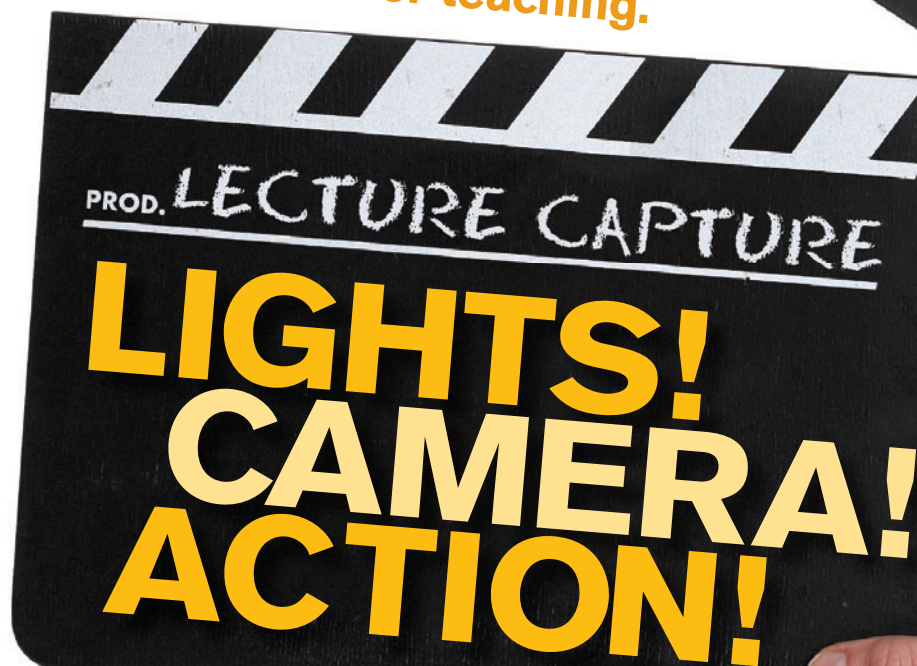
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June 2011

Lecturing on camera may send some faculty running for the wings, but proponents say it leads to better teaching.

PROD. LECTURE CAPTURE

LIGHTS! CAMERA! ACTION!

Volume 24 Number 10

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Contents

vol. 24 no. 10   June 2011

In This Issue

Focus

Features

COVER STORY

Making Time

Stand-and-deliver pedagogy has a bad rap these days, but technology can preserve what's best about lectures and make room for other kinds of instruction.

Pity the poor lecture, which has been much maligned of late by progressive educators. We need to move from the "sage on the stage" to the "guide on the side," say education reformers who want learning to be more authentic and engaging.

I am all for student engagement, and by that I don't mean entertainment. Engagement means investment—investment in the process and in the outcome. And it's all too true that lecture-based instruction can foster incredible passivity. Just look at the back row of any lecture auditorium and count the number of sleeping students to understand what passive "learning" looks like in the extreme.

But lectures aren't ipso facto bad pedagogy. Sometimes lectures are the most efficient way to communicate certain kinds of information. The argument that students can read the information rather than have to sit through a lecture is a good one—if reading is the most expeditious form of intake for a student. But many students learn better by listening. Furthermore, a good lecture isn't static like a book. Any lecturer worth her salt will embellish, go off on a useful tangent, add humor to punctuate a point—none of which you'll find in a textbook.

Besides, I sometimes *like* to listen to a sage on the stage. When I was in college, I found some professors inspiring. The breadth of their erudition, their articulateness, their command of a (yes, say it) stage—all of that made me want to learn more, be a better student, engage more deeply in the ideas the lecturer exposed me to.

So, for me, the problem with lecturing is not that it exists, but that in many courses it's the only pedagogy used—and that is a missed opportunity.

Our cover story this month looks at the effect of lecture capture technology on the person in front of the camera—the instructor. Not surprisingly, some instructors are horrified when they see themselves on camera and don't want

The problem with lecturing is not that it exists, but that in many courses it's the only pedagogy used.

to use it anymore. But many more see the exposure, if you will, as an opportunity to improve their performance.

And while the main use of the technology is to make lectures available to students who miss class or for review, a growing number of professors prerecord their lectures for students to view on their own time, so that they can use class time for more engaging activities like discussion. They are able, through the use of lecture capture, to transform a lecture hall into an interactive learning environment.

In essence, what is actually being captured is *time*, that most valuable and elusive instructional asset. A professor who prerecords a lecture gives herself time to plan how to use class time to engage students in actively participating in their learning. Now that's progressive. **CT**

—**Therese Mageau, Editorial Director**
tmageau@1105media.com

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New Super-35mm Tools for Digital Filmmaking
Get an inside look at what the **University of Southern California** and **Columbia** (NY) film schools are doing with new high-definition compact cameras.

Revolutionize Campus Safety
Learn how **Stony Brook University** (NY) and **Montclair State University** (NJ) are using mobile applications to enhance safety on their campuses.

Trending Articles on *CT*

- **Yale Begins Move to Google Apps** *campustechnology.com/0611_yale*
- **Evolving the E-Portfolio at Penn State** *campustechnology.com/0611_eportfolio*
- **Faculty 'Buy-in'—to What?** *campustechnology.com/0611_faculty*

Viewpoint

An Intelligent Use of Business Intelligence
Houston Community College System's (TX) vice chancellor of information technology explains how a BI solution has provided centralized online reporting, a dashboard, and consistent information for better decision-making.

campustechnology.com/viewpoint

Features

Recruiting With Technology
At the heart of **Cal Poly**'s high-tech recruiting strategy is a mission to communicate with students on their own time and using their own tools. So the California institution is continually evolving its recruitment practices with technologies ranging from customized student "VIP" microsites to mobile device-augmented campus tours.

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Events Calendar

Jun 11 - 17
InfoComm 2011
infocommshow.org
Orlando, FL

Jun 12 - 15
League for Innovation in the Community College
Learning College Summit 2011
league.org/ls2011
Phoenix

Jul 9 - 12
National Association of College and University Business Officers
NACUBO 2011 Annual Meeting
www.nacuboannualmeeting.org
Tampa, FL

Jul 25 - 28
Campus Technology 2011
campustechnology.com/summer11
Boston

Jul 25 - 28
Association for Authentic, Experiential and Evidence-Based Learning
AAEEBL World Portfolio Summit
aaeebl.org
Boston

Aug 7 - 12
The Data Warehousing Institute
TDWI World Conference
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6 ■ CAMPUS TECHNOLOGY | June 2011

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Creating Digital Resources

CT's April feature "Mastering the Online MBA" (campustechnology.com/articles/2011/04/01/mastering-the-online-mba.aspx) explored the benefits of partnering with a for-profit business to help faculty translate brick-and-mortar instruction into an online degree program.

I take exception with Susan Metros' comment that "it's time to move away from the idea that faculty should create their own digital resources." In some discipline areas there is a wealth of publisher content (psychology, for example), but for others, the content just isn't there (for example, economics). And with the available tools being so simple, faculty can produce remarkable materials—production values are not as polished as they are for publisher materials, but students really like the content. I'm just giving the perspective of a faculty member who felt compelled to create her own digital content!

Mary McGlasson
Comment posted on *campustechnology.com*

Going to Google

In "Yale Begins Move to Google Apps" (campustechnology.com/googleyale), a CT *news story that appeared online,* **Yale University** *(CT) announced that it will formally transition to Google Apps for Education, a free suite of online collaboration and communication tools.*

When records—especially academic records—are entrusted into the custody of a third party, security and safety—and, hence, the quality of academic degrees—stand to be compromised. A number of universities and corporate institutions tend to entrust main database and internet applications into the hands of third-party enterprises. Yet one would have thought that an old university like Yale could train and produce skilled manpower to design and set up powerful IT infrastructures that could support and service not only the limited needs of the Yale community, but adjacent bordering districts. Yale must sit up and take the lead in IT that reflects its long-standing name.

Martin Atayo
Comment posted on *campustechnology.com*

I don't agree with Martin's comment. Either he has never worked in an educational technology field or he has had an unlimited budget. With technology driving almost every part of the institution, most tech departments are forced to continue to provide subpar solutions for e-mail and collaboration with lots of overhead, or outsource to something like Google Apps. Way to go Yale—good move!

Mike
Comment posted on *campustechnology.com*

Technology and Teaching

In the online viewpoint "Faculty 'Buy-in'—to What?" (campustechnology.com/articles/2011/04/06/faculty-buy-in-to-what.aspx), columnist Trent Batson asserted that, while IT advocates urge faculty to embrace technology change, the goal should not be simply to use new technology—true integration is needed.

As a faculty member (biological sciences) at a state university, I agree with what Batson is saying. Most of the faculty here are resistant to the use of more technology because they have yet to see any proof that it increases learning. I personally love technology and was one of the first professors on our campus to use it in my classes (back when it involved using terminals connected to the mainframe), but I think the use of technology should supplement, not replace, traditional teaching methods. There are some faculty who use technology because they are lazy or poor lecturers. The students complain about all the "boring" PowerPoint presentations in their classes. I've always gotten high student ratings. The worst ratings I ever got were in the year when I switched to PowerPoint. After going back to mainly chalkboard/whiteboard lectures with a only a few computer slides to supplement them, my ratings went back up.

We have some faculty now who panic whenever they can't get the classroom computer to work. They feel helpless without it. And if the students think in-class slide presentations are boring, think about taking an online class that consists mainly of page after page of slides of the faculty member's notes (mostly now supplied by the book publisher) along with reading the online textbook. No wonder the failure rate for online classes is higher than for on-campus classes both at our university and nationwide.

Ed Nelson
Comment posted on *campustechnology.com*

Cautionary Tale

"College CIO for Hire" (campustechnology.com/articles/2011/02/01/college-cio-for-hire.aspx) was an online companion piece to CT's February cover story, "Bonding With Your CFO." In it, we reported on **North Shore Community College***'s (MA) success using an outsourced CIO.*

We tried outsourcing our CIO and it was a disaster (in fact, we are on our fourth outsourced CIO in about three years). The budget exploded dramatically to the detriment of other core functions. Student learning and operational efficiency took a back seat to the awarding of contracts and making sure consultants were kept happy. We are going back to hiring a full-time person who cares about student learning and efficiency.

PS
Comment posted on *campustechnology.com*

We want to hear from you! E-mail us at *editors@campustechnology.com*, or join the conversation on the web at *campustechnology.com*. Letters are edited for length and clarity.

Managing Data Intelligently

Higher ed campuses are overflowing with data. Dell has a strategy to manage it.

With the proliferation of digital information college and university campuses find themselves quite literally overwhelmed with data. Dell has an innovative strategy to manage it all. Termed Intelligent Data Management (IDM), the Dell strategy combines a set of innovative technologies with implementation best practices to make data management more efficient. CT Senior Contributing Editor Matt Villano recently caught up with John Mullen, Dell's vice president and general manager for education, state and local government, to learn more about their approach.

Campus Technology: What are some of the innovations and change-drivers that Dell has identified as having a big impact on approaches to data storage in higher education?

John Mullen: We've participated in providing storage to higher education for an awfully long time, and we've had the opportunity to observe and understand first-hand. We're seeing a number of big change-drivers that are impacting data storage and management. Researchers are generating data at unprecedented rates. Imaging technology is increasingly being used to eliminate paper and improve administrative processes. Electronic readers are gaining popularity as books, magazines and journals become increasingly available electronically.

Where traditionally, the storage environment grew in a decentralized fashion across campus, we're seeing that centralization of data storage and management is becoming increasingly important as institutions work to gain control over their data and to drive efficiency. And we are seeing an interest to exploit new IT delivery models such as cloud computing and "-as-a-service".

CT: Overall, what was Dell hearing from higher education customers that led you to build out your storage and management infrastructure, and how do these advancements represent changes to Dell's overall strategy?

Mullen: Every single CIO that I know in higher education is really struggling with solving the storage challenge, so we've heard they wanted more for years. We listened. For several years now Dell has been making investments to build a comprehensive strategy and portfolio of storage and data management solutions. Our Intelligent Data Management strategy is an on-going effort to take a much more definitive point of view on technologies and to incorporate intellectual property to provide best-of-class solutions. The Intelligent Data Management strategy is guided by three overarching principles: Our storage and data management solutions are open and non-proprietary, capable and affordable.

CT: We've noticed that Dell has tackled

a lot of this capability by acquiring companies that have either developed it or acquired it themselves. Why did you take this approach?

Mullen: We haven't relied solely on acquisition; but we do look for opportunities where we can purchase leadership technology that complements our

portfolio. We acquired Compellent. a company that really enables institutions to efficiently centralize their storage and management. They have patented technology for key capabilities like automated data tiering and data replication. We've developed solutions for faster more efficient backup and recovery; and archival solutions to retain and preserve records for the long-term. And to address the growing interest in alternative IT delivery models, our services team introduced Email and File Archive solutions that can

be delivered via cloud or on-premise, as well as storage-as-a-service solutions that can be used to augment the production environment or for off-premise back up and disaster recovery.

CT: Budget cuts today are grabbing headlines all over higher ed. What data management approaches allow academic technologists to actually lower IT costs while optimizing data management efficiency, and what do some of these strategies involve?

Mullen: A number of leadership technologies in the Dell portfolio hit this head on. One is the combination of deduplication and compression technologies. Deduplication enables you to reduce the data footprint by eliminating redundant data and storing only unique data. Here's an example. When a professor sends the class an email with an attachment, rather than save a copy of the attachment for each class member, data deduplication saves only one copy of the attachment along with a pointer back to the one saved copy. Deduplication also reduces backup needs as you only backup a single copy of the attachment. This is a simple example but you can imagine how these savings multiply. Compression is a complementary capability that enables you to further reduce file size for optimum capacity reduction and cost savings. We acquired Ocarina and we are embedding their industry leading deduplication and compression technology into our storage offerings.

Another technology is data tiering. Automated data tiering has emerged as a best practice and it improves applica-tion performance and storage economy by moving data to less expensive storage based on business criticality—how often the data is accessed, workload characteristics, and so on. For example if a student record gets accessed every day, the auto-tiering system automatically will store that record on a faster disk for best performance. If a record is only accessed once a year, the system will automatically store the record on the least expensive storage tier. When you use automated data tiering you buy fewer and less expensive disks resulting in significant savings. Dell EqualLogic and Compel-lent both offer automated data tiering.

CT: What other cost-saving storage technologies is Dell investing in?

Mullen: Archiving is another important investment area for Dell. Archiving helps optimize data retention by storing the primary copy of the data on platforms that use policies to facilitate long-term reten-tion and preservation. This is something we've been doing for a while with our PowerVault line. We also developed the Dell DX Object Storage Platform which can access, store, and distribute up to billions of files or other digital content, from local archiving all the way to the cloud. The DX is designed to store vast amounts of unstructured data while, at the same time, providing policy-based retention features so you can meet the governance and compliance requirements that are increasingly becoming an issue in industries like [higher education].

CT: And finally, John, what's next? How does Dell plan to extend and amplify the strides you've already made in data stor-age and data management?

Mullen: The technologies we've dis-cussed here all contribute to addressing the plethora of storage and data man-agement challenges higher education is experiencing. The Dell Intelligent Data Management strategy is really about ap-plying the technologies we've discussed to the customer's storage environment in an intelligent way. We try to go in and assess how our customers are using stor-age and what they're using it for. Then we make specific recommendations about which of these technologies are best applicable, based on the storage chal-lenge or problem or optimization issue that particular customer may be facing. We're continuing to invest in our portfolio to give our customers leadership storage and data management solutions with the future built-in. We'll be introducing sev-eral exciting new offerings in CY 2011.

Campus+Industry

NEWS

CROWDSOURCED BETA.

Blackboard is launching a beta program to crowdsource the development of its Blackboard Collaborate platform. Collaborate combines the functionality of Wimba and Elluminate, two product lines acquired in separate transactions in July 2010. The integrated Collaborate platform supports web, video, and audio conferencing; presence and instant messaging; and other forms of digital communication. Participants in the beta program will test and provide feedback on the next version of the platform. The focus of the latest crop of enhancements, according to the company, will be ease of use and accessibility.

PLAGIARISM GOES SOCIAL.

Paper mills and cheat sites are losing ground to social and user-generated websites as sources of material for student papers, according to a recent
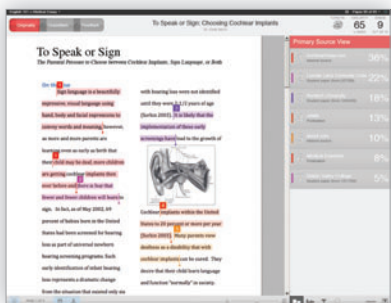
study by iParadigms, a company that develops applications for detecting plagiarism in written work. According to the study, Wikipedia is the most common source for plagiarism. A third of matched content derives from online sites where people contribute and share content, while only 15 percent of content matches have ties to sites specifically promoting "academic dishonesty." The study examined the sources for 110 million content matches in 40 million student papers submitted to iParadigms' Turnitin service over a 10-month period, from June 2010 to March 2011.

CLICKERS AT UMASS.

Beginning this fall, the **University of Massachusetts Amherst** will deploy iclicker2 from Macmillan New Ventures as its centrally supported classroom response system. The newly updated device incorporates an LCD screen that can confirm when student responses have been received. It also includes alphanumeric support, improved battery-compartment design, and a battery-status indicator. Clickers are currently being used by more than 60 UMass Amherst faculty and approximately 5,000 students per semester.

FACULTY-BUILT TEXTBOOKS.

AcademicPub, a division of SharedBook, has introduced a service that enables instructors to create digital and print texts by compiling materials from multiple sources: copyrighted works, faculty-created material, and resources from the company's own library. The service also enables instructors to collect royalties on the materials they personally contribute to the textbooks. Read more at *campus technology.com/articles/2011/04/26/ academicpub-opens-custom-textbook-building-to-faculty.aspx.*

CALL FOR EARLY ADOPTERS.

Jasig, a consortium of higher education institutions and commercial organizations dedicated to the development and promotion of open source software, is launching a new open source project called uMobile. The project will be built on the uPortal framework and will provide portal-like functionality on mobile devices, initially with features like campus maps, directories, RSS feeds, calendars, course schedules, campus news, and other tools common to mobile portal apps. Early development will focus on native apps
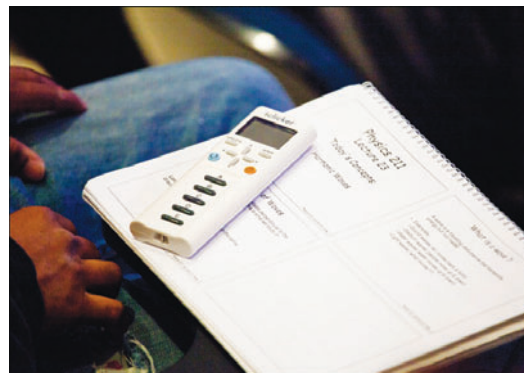
AFTER MONTHS of evaluation, the University of Massachusetts Amherst has selected iclicker2 for students and faculty.

and browser-based portal functionality on iOS and Android devices. According to an announcement issued by the consortium, Jasig is "requesting the participation of colleges and universities as contributing stakeholders or early adopters in incubating this new open source project." Read more at *campustechnology.com/articles/2011/04/ 25/open-source-group-seeks-support-from-higher-ed-for-mobile-initiative.aspx.*

ELECTRONIC PAYMENTS.

Edison State College (FL) has implemented Higher One's CashNet ePayment to allow students to make electronic payments. The suite of payment-processing tools enables automation of billing and processing, cashiering, and departmental web storefronts. Edison State students and their families now can use credit cards, debit cards, and checks to pay charges and fees online; split payments among credit cards, debit cards, and checks; set up recurring payments; make third-party payments; and access account information faster.

YALE EMBRACES GOOGLE.

Yale University (CT) has announced that the campus will formally move to Google Apps for Education, a free suite of online collaboration and communication tools, including hosted e-mail, calendars, video chat, and productivity software. In a post in the *Yale*

Daily Bulletin, Chuck Powell, associate CIO for operations, support, and services within the school's information technology services department, said the move is designed to benefit students with additional services and to free IT staff to handle other projects. He added that the move has taken into consideration security concerns that were first raised last year when hints of the move became public. "We have a contract with Google that we think takes good care of Yale's privacy and security," Powell said in the *Bulletin* post. The migration to Google Apps is expected to be complete by the end of the 2011-2012 academic year for students and for the 2012-2013 year for faculty and staff.

YALE'S MOVE TO GOOGLE APPS is designed, in part, to free up IT staff to handle other projects.

GROWTH AT INSTRUCTURE.
Instructure, the relative unknown that swooped in last December and won learning management system (LMS) business from entrenched competitors at the Utah Education Network, has just finished a new round of financing. The startup's Canvas LMS mixes social networking functionality with standard course management operation. The infusion of $8 million in Series B funding will primarily go into growing the company head count, says Instructure CEO Josh Coates. To keep up with market demand, most hiring will take place in sales and support operations.

E-LEARNING APP.
The **University of Southern California** Rossier School of Education is providing a native application for Apple's iOS platform that allows online students to do their work on an iPhone or iPad. The free iOS app, created through a partnership between USC Rossier and 2tor, allows students to view course content, including lessons, documents, and videos; find and communicate with other members of their program; post photographs, documents, and videos for viewing by course participants; receive notifications of upcoming live sessions and assignment due dates; participate in socially created communities; and take content-specific notes.

GRANT MANAGEMENT.
The **California Community Colleges** Chancellor's Office is turning to business process management software to streamline its grant funding and distribution processes. Process Director from BP Logix will help CCC eliminate paper applications, improve information accuracy, and automate workflow as it allocates millions of dollars in state funding to nursing and allied health programs in 112 colleges and 72 districts.

M&A, Etc.

DESIRE2LEARN ADDS LECTURE CAPTURE.
Desire2Learn has acquired Captual Technologies, a lecture capture firm that counts as its customers the Faculty of Medicine at the **University of Toronto** (ON) and the School of Medicine at **Flinders University** in Australia. Captual's ePresence system, now renamed Desire2Learn Capture, records presentations in real time with synchronized audio, video, and visual additions. Recorded material can include video, slides, screen and peripheral sharing, interactive whiteboard activities, and output from document cameras, as well as viewer chats and comments. The captured content can be streamed live as well as delivered in archived form. Desire2Learn plans to develop web services that will allow the streaming of lectures to mobile devices. Read more at *campustechnology.com/articles/2011/04/20/desire2learn-acquires-epresence-launches-capture-suite.aspx.* **CT**

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More Students + Budget Cuts = Tough Choices

Community college CIOs share strategies for weathering the storm.

WHENEVER TIMES ARE TOUGH, someone always trots out the old saw, "When life hands you lemons, make lemonade." For many community colleges, though, it seems as if they're not even getting any lemons. Across the nation, student enrollment is exploding, while budgets are being slashed to the bone. It's not pretty out there.

A March 2010 report by the League for Innovation and the Campus Computing Project says it all: "Still Doing More With Less." In a survey of 128 community college campus presidents and district chancellors for the report, 94 percent of respondents said enrollment in their districts had increased, while 52 percent reported operating budget cuts.

"The community colleges are the canary in the coal mine," explains Kenneth C. Green, founding director of the Campus Computing Project, who paints a dire picture of colleges' ability to support their faculty and burgeoning student bodies. "It's because the larder is bare. State funding is falling."

And those cuts are increasingly being felt in IT departments. Central IT services have been affected by budget cuts in 46.2 percent of community colleges, up from 38 percent in 2009, according to the 2010 Campus Computing Survey.

While their first impulse might be to lock themselves in a room and weep, community college CIOs across the country are having to find innovative ways to deal with the double whammy of increasing enrollment and state budget cuts. *CT* recently talked with four CIOs at two-year institutions to see how their institutions are coping.

Centralizing Services in Florida

Karl Herleman, CIO of **Miami Dade College**, knows all about doing more with less. In the last couple of years the college has lost approximately $45 million in state funding. "That's more than my entire IT budget," he notes. "We are 30 percent down in IT staff over the last few years. It is getting ridiculous, but I can't blame anyone. When we are looking at a possible 10 to 15 percent cut in state funding, it doesn't make sense to start hiring people."

Meanwhile, the eight-campus college has experienced an influx of more than 30,000 new students in just the last year.

Herleman has responded to the staff cuts in several ways. Prior to the economic meltdown, services such as web development and tech support were handled at the individual campuses. These functions have now been centralized. And, in an attempt to free additional employee bandwidth, Herleman is using FAQs on social media networks such as Facebook to help students

MIAMI DADE COLLEGE has experienced an influx of more than 30,000 students in one year, but has lost about $45 million in state funding over the last couple of years.

resolve issues themselves, thereby reducing the number of calls to the help desk.

Perhaps his biggest headache, though, is an aging ERP system that was purchased through the Higher Ed Tech Group, a consortium of nine colleges. The ERP is a monolithic mainframe system with no business rules or workflows, no relational database, and it's weak in finance and

organization," Mata explains.

The vendor review is paying dividends. Instead of spending several hundred thousand dollars to upgrade the storage area network, for instance, Mata decided to make a much smaller investment in the existing technology and simultaneously deploy more flexible and cost-effective new technology from a competing vendor.

Thanks to the cost savings from virtualization, SCC's IT department has been able to create a $50,000 innovation grant. Faculty members can apply for funding to try out new technologies in the classroom.

HR, says Herleman. What's more, it takes a long time—and a lot of employee hours—to put changes in place. He believes that moving to a web front end would result in huge efficiency gains for all administrative staff.

Unfortunately, the same economic crisis that has decimated his staff is now thwarting his efforts to improve efficiency: The other schools in the consortium want to avoid the upfront costs involved in replacing the ERP.

In the interim, Herleman's team is taking a Band-Aid approach, hoping to improve the college's business systems by developing web-based management tools that operate on top of the current ERP system.

The procurement process is a prime example. "The system is very inefficient for purchasing," explains Herleman. "It takes several hops in approvals and the person approving has no access to original documents."

The new web-based tool automates how procurement documents are shifted from department to department, with greater transparency and visibility. "Increasing that visibility will save time and money," adds Herleman.

Rethinking Vendor Relationships in L.A.
It's in the nature of institutions to slip into comfortable routines that become unquestioned over time. In fact, it often takes a jolt—say, the train wreck of the world economy—to make institutions take a long, hard look at themselves. That's exactly what's happening at the nine-campus **Los Angeles Community College District**, where CIO Jorge Mata recently faced the possibility that he would have to make seven-figure budget cuts.

In such a harsh budget environment, he also realized that he would have a tough time explaining why LACCD was paying more than other organizations for similar services. As a result, Mata challenged his staff to question their assumptions about—and relationships with—the district's vendors. "We are forced to balance our comfort level with existing vendor solutions with the business needs of our

In addition, the IT staff established new ways of provisioning storage that emphasized just-in-time principles vs. over-provisioning. "My team learned new skills, and the new technology allowed them to perform their jobs," Mata says.

And what of the district's budget? "Sure enough, I was asked to contribute funds to help balance the budget," says Mata, "and we were able to do that without having to take any drastic measures."

Going Virtual in Arizona
For **Scottsdale Community College** (AZ), squeezing dollars out of the state is becoming harder than finding water in the Arizona desert. "We are looking at the possibility of no longer receiving any state government funding," says Dustin Fennell, SCC's CIO. "That hasn't been announced yet, but the writing is on the wall. We have to be prepared for it."

If Fennell's fears are confirmed, SCC's policy of refreshing its hardware every few years is not going to be financially sustainable. That's why SCC is investing in virtualization as the key to future operations.

The school's web-based portal project, titled mySCC, launched in August 2008. It leverages desktop virtualization technology from Citrix to give students access to virtual desktops, applications, personal files, and network resources from any computer with internet access.

Fennell has already identified $250,000 in cost savings from the project, including extending the lifecycle of hardware and paring his staff of 34 down to 30.

"Rather than replace 25 workstations, I can spend half as much on servers in the data center," he says, "and the old PCs get better performance in that virtual environment." ▶

With some of the cost savings, SCC's IT department has even been able to create a $50,000 innovation grant. Faculty members can apply to the IT department for grant

"We are 30 percent down in IT staff over the last few years. It is getting ridiculous, but I can't blame anyone."

—Karl Herleman, Miami Dade College

funding to try out new innovations in the classroom. "We give out two $25,000 grants a year," Fennell says. "Right now, we have 36 English and journalism students using iPads and e-textbooks from McGraw-Hill in their courses."

Mining Business Intelligence in Ohio

The number of students at **Sinclair Community College** in Dayton, OH, has jumped 30 percent in the last three years, to around 26,000. The increase has put pressure on the school's IT department to accelerate its updating of technology in 300 classrooms and to bolster the learning management system for 6,000 students in online classes.

Kenneth Moore, the college's senior vice president and CIO, says business intelligence software from SAS has helped his IT group identify trends and do predictive modeling based on usage patterns and enrollment. In turn, this

has helped the school in provisioning for data center expansion, call center staffing, and library computer availability.

"We look at how enrollment trends will impact hardware and look at peak CPU utilization and transaction rates to help determine what we need to purchase," explains Moore.

Clouding the Issue

All four of these CIOs say they are also considering software as a service and cloud offerings as a way to save their colleges money.

Traditionally, community colleges have been slow to move to hosted services, according to Green at the Campus Computing Project. "There's a sense they want to own a service and hold it, and an idea of keeping jobs in the community," he says. "But now the pressure related to costs is a catalyst to look for new ways to provide services for less money." **CT**

David Raths is a freelance writer based in Philadelphia.

A Failure to Communicate

As IPv4 addresses run out, schools that fail to plan a transition to IPv6 face the possibility that their systems will be unable to communicate with others.

IN APRIL, ASIA OFFICIALLY ran out of Internet Protocol (IP) version 4 addresses—the computer equivalent of running out of telephone numbers. Over the next couple of years, the rest of the world will also run dry. Yet, unlike the Y2K bug that had some people convinced the sky would fall, this particular problem is generating little more than tired shrugs from IT folks.

IPv4, whose addresses have 32 bits, is being replaced by a new protocol, IPv6, whose addresses are 128 bits long. While the transition to IPv6 will definitely inflict its share of problems and annoyances, the depletion of IPv4 addresses is not immediately threatening to most colleges and universities, many of which still have large pools of IPv4 addresses. Unlike the Y2K bug with its threat of a midnight meltdown, this is a problem that most IT administrators feel can be tackled gradually.

Indeed, many institutions, especially smaller schools, are just starting to plan for the transition—or are planning to plan for it.

But the issue facing IT departments is not that they will run out of IP addresses. Instead, they must confront two other challenges: ensuring that IPv4 addresses can communicate with IPv6 addresses during the drawn-out transition period; and tackling the inevitable security issues that come with the implementation of any new protocol. No one's quite sure what the future will hold on that front.

Bridging the Gap

"We're not running out of addresses; we don't need IPv6 to replace addresses that we don't have," confirms Vince Stoffer, network security administrator at **Reed College** (OR), which hopes to roll out a transition road map over the next year or so. "We're looking at it more as a need to communicate with the rest of the world that might be exclu-

sively using IPv6. We'll soon be to the point where people in Asia or other parts of the world can only connect with IPv6. If we're not offering IPv6 services, they're not going to be able to view our campus web page or communicate with us using certain types of services," such as Skype.

It is fear of this communication breakdown that is likely to drive the transition efforts of many institutions, agrees Tim Winters, senior IT manager in charge of the IPv6 Consortium at the **University of New Hampshire** InterOperability Laboratory (UNH IOL). "Someday there will be users in the network who are v6 only," he notes. "And that's when you're going to see universities start to

make e-mail and websites accessible over v6."

Winters, who has been studying IPv6 since 1998, when it was just a theory, has seen the tide turn toward acceptance of the new protocol. Previously, before the IPv4 allocations began to run out, network administrators developed techniques or new technologies to extend IPv4. In Winters' experience, though, such workarounds often cause additional problems.

Now the focus is shifting to two solutions that will allow IPv4 and IPv6 devices to communicate with one another: dual-stacking and tunneling. Dual-stacking refers to the side-by-side implementation of both IPv4 and IPv6 protocols in a single environment, so devices can connect to either type. Tunneling, on the other hand, refers to carrying encapsulated IPv6 packets over IPv4 networks. Tunneling may be an attractive option for IT shops that don't have the expertise to implement a dual-stacking solution.

Security Alert

Security concerns among IT shops are another of the reasons why institutions have been slow to adopt IPv6. Many security devices carry a sticker of IPv6 readiness, but in fact do little more than read the IPv6 traffic. On closer inspection, firewalls don't block the traffic the way they do in IPv4, and corollaries for IPv4 intrusion-detection rules don't exist yet for IPv6.

The federal government is taking the lead on the security front. USGv6, a program that falls under the auspices of the National Institute of Standards and Technology, was tasked with establishing the technical infrastructure to support IPv6 adoption by government agencies. Working in conjunction with UNH IOL, USGv6 documented security policies for new IPv6-

New Equipment

Regardless of how worried colleges and universities are by IPv6's potential security flaws, the reality is that IPv6 adoption isn't optional. IPv6 *will* be the new standard, and an institution's purchasing policies should reflect this.

"The key is to ask if something supports v6," Winters says. "You don't want to buy something today that won't be supporting it, or doesn't have a road map to do it, because then you're going to have to replace it again."

Operating systems will be IPv6 ready, he says, but peripheral devices like printers and data storage might not be.

Stoffer agrees. "If I were spending a bunch of money on a new device, I would really be following up, saying, 'Tell me about your road map for v6 and how it works on this piece of hardware and how that's going to change over the next couple of years,'" he says. In the meantime, he monitors IPv6 newsgroups and discussions to stay on top of developments, with the expectation that IPv6 readiness will be a major criterion for future IT investments.

Fortunately, given the gradual nature of the move to IPv6, many schools can transition to IPv6-ready equipment as they upgrade their networks over the coming years.

Bug Bash

While many higher ed institutions may be a little late to the party, the transition to IPv6 is definitely getting traction elsewhere. On June 8, the Internet Society (ISOC) will host World IPv6 Day, a worldwide IPv6 bug bash with participants such as Google, Yahoo, and Facebook offering their content over IPv6 for at least 24 hours.

In addition to testing the IPv6 readiness of these organizations, ISOC intends for World IPv6 Day to raise

"We're looking at it more as a need to communicate with the rest of the world that might be exclusively using IPv6."

—Vince Stoffer, Reed College

capable security devices. The lab used this profile to create testing for the devices, including hosts, routers, and firewalls. Today, a list of products certified according to the profile requirements is a reference for government purchasers (*w3.antd.nist.gov/usgv6/testing.html*). This is the first step toward anticipating the kinds of security breaches that are likely to occur with IPv6.

Nevertheless, says Winters, "there will be new attacks for v6. I don't think we'll find out the issues until we really start to deploy IPv6. Then we'll find out, 'yeah, this is a problem,' and we're going to have to find a way to stop it. This is no different from v4. People are always finding new security holes. It's a similar model."

awareness and help ease the transition to the new protocol. At the very least, events like World IPv6 Day offer a glimpse of IPv6 as it currently stands in the slow, steady march away from IPv4. **CT**

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

lights! camera! action!

As lecture capture becomes commonplace on campus, faculty discuss how it's changing the way they teach, spurring in-class dialogue, and forcing them to become better instructors.

By John K. Waters

ADVANCED CAPTURE TECHNOLOGY has become almost ubiquitous in higher education: If your institution doesn't have it, chances are that you're trailing the competition. Students want it. Tech-savvy teachers like it. And blended learning environments practically demand it.

The most commonly touted benefit of these systems is that they are student centered. Capturing, indexing, publishing, and storing class lectures in online repositories, vendors say, provide students with a resource that improves learning outcomes. But you rarely hear about the effect this technology is having on the people *in front* of the camera. Has lecture capture changed the way instructors teach? And, if so, has it improved the quality of their teaching? ▶

Arthur Giron

PERFECTING YOUR SOLO

"What we're seeing is the accelerated death of the lecture as we know it," comments Stephen Laster, CIO of **Harvard Business School** (MA). "I think that's a *good* thing, but my concern is that we do it in ways that add to learning and teaching effectiveness. Otherwise, all we're doing is adding cost and complexity."

Laster argues that the value of lecture capture—any technology, really—depends entirely on the pedagogy to which it is applied.

Lecture capture hasn't had much of an impact at HBS, Laster suspects, because the institution has long embraced a case-based approach to teaching and learning. "For many years, our classrooms have been about engagement and action," he says. "We don't do lectures, and haven't done them for a while."

Laster feels that lecture capture really comes into its own in those courses that teach the fundamentals to large classes. "Lecture capture as a replacement for the 400-student experience in the lecture hall can make a lot of sense," he explains. "But where you have a more interactive classroom style, it doesn't make sense."

Interestingly, faculty at many institutions now see lecture capture as a way to help transform those large classes into the kind of interactive learning experience that Laster describes.

Front-Loading Lectures

Deirdre Jones, associate director of innovative outreach technologies for the College of Business at the **University of Toledo** (OH), says her school first embraced lecture capture for its potential as a study aid, but that it has clearly changed the *way* she teaches. Because the technology essentially separates the lecture from the class, Jones is able to front-load her lectures, making them available for students to review online before class. She then uses class time for group discussions.

"I prerecord some lectures on an upcoming topic, and I keep recordings of past guest speakers who were particularly good and reuse them," she explains. "I say, 'Okay, watch these lectures, then we'll use the class period for discussion purposes.' I don't have to be—or want to be—the Sage on the Stage. I think this approach has

ANNE-MARIE LERNER, an assistant professor in the engineering department at the **University of Wisconsin-Platteville**, says that lecture capture has made her a better performer, literally.

Lerner

"When I first started doing lecture capture, I just ignored the camera and focused on the students," she says. "I thought the camera doesn't give you feedback. Well, it turns out that when you're looking around the room at your students, making sure they're following you, you look really shifty in the video, because you're never looking at the camera. You can't ignore the camera, because that's where your students will have that one-on-one experience—and not just the off-campus students. Even the local students will be going back to the recording later to review the lecture from Old Shifty Eyes."

Lerner found inspiration to improve her lectures from an unexpected source: late-night talk show hosts.

"It's the same setup," she says. "They all have live studio audiences, and the people in the audience seem to be having a great personal experience. But the host isn't looking at them. When the host does occasionally break eye contact with the camera and talk to the audience, we, the viewers, feel left out. I've found that looking at the camera about 70 percent of the time and your students 30 percent of the time is the right ratio."

This is not to say that college professors should be working on stand-up routines, Lerner hastens to add.

"No one needs to become Jay Leno to make this work," she says. "But lecture capture is forcing people to up their game. It forces you to address a skill set that you might not have thought much about, or not for a long time. And I think it's going to cause people to look at their curriculum and ask how they can use this technology to serve their students better."

And don't confuse "eye contact" with "attention," Lerner continues. "The camera is where I put my eyes, but my attention is always on my students," she explains. "One reason I give so much focus to the camera is that my students are mostly watching the screen or the board and internalizing what I've written. And the truth is, most students get weirded out when you make too much eye contact with them."

"A college lecture is definitely a performance," agrees Deirdre Jones, associate director of innovative outreach technologies for the College of Business at the **University of Toledo** (OH). "Watching yourself on tape can be a tough experience the first time. I had one faculty member come up to me and say, 'I love the system, but you have to make me an avatar. Nobody wants to look at this old, fat white guy; I need you to make me look like Brad Pitt!' He was being silly, of course, but he was pointing to a genuine concern.

"Some faculty members have noticed that they pace awkwardly, that they use 'um' or filler words, that they don't make eye contact with their students. I play with the change in my pockets. We all have little things that we can improve upon."

helped to improve the dynamics of the classroom experience."

Anne-Marie Lerner, an assistant professor in the engineering department at the **University of Wisconsin-Platteville**, is also experimenting with prerecorded lectures, and reports that her colleagues have used them with great success. She does sound one word of warning, though: The practice of prerecording lectures, she says, has the potential to increase course content above

and beyond the credit hours listed in the catalog. The types of prerecorded videos that tend to work best, she says, cover such topics as how-tos for using lab equipment or theoretical instruction that can then be followed by an in-class discussion section.

In the experience of Garret Brand, professor of law and director of distance learning and instructional technologies at **Grand Rapids Community College** (MI), making his lectures available online for

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students before class has given him more of a precious commodity: free class time. He also finds that he's less concerned about pacing the lecture so his students can keep up with their note taking.

"My students don't seem to be taking notes as much as they used to, because they can replay the lecture," he says. "They no longer need notes as a record-keeping tool. And seeing that, I've found that I'm adjusting my lecture style, spending less time on the stuff they can get online."

Chris Mizell, a mathematics professor at **Northwest Florida State College**, made a similar adjustment when he began using lecture capture in 2008.

"I find myself not being quite as worried about copying every little aspect of each definition onto the board," he says, "because I know that the students can go back and get all the details from the captured lecture. It saves me time to focus on the problem solving without having to fill in as many details."

Polishing One's Performance

Lecture capture is changing more than how faculty structure their classes, however. It's actually altering how instructors handle themselves at the front of the room. Lerner began teaching in a lecture-capture-enabled classroom in spring 2009, and she's convinced that the technology has made her a better lecturer.

"Lecture capture is an incredible tool for self-reflection," she notes. "Class time for an instructor can be a bit of a blur, and this technology gives you an unbiased eye—that impartial feedback that even a colleague watching you cannot provide. It's definitely made me much more cognizant of the way I communicate ideas, which I'm certain is making me a better instructor." (See "Perfecting Your Solo," page 24.)

Seeing oneself through the cold lens of a camera can definitely be an eye-opening experience for many faculty. "It's been inter-

esting to see some little mannerisms I have that I hadn't been aware of," notes Mizell.

The benefits of self-analysis are certainly not lost on lecture capture vendors. "You can't have your lectures captured and made available for consumption by students later and not have that change you as a teacher in some way," claims Sean Brown, VP of education at Sonic Foundry.

Brown likens the effect of lecture capture on the quality of teaching to the impact of television on the performance of pro football players. His father, Aaron Brown, was a professional football player from 1966 to 1975, a defensive end who

played for the Kansas City Chiefs in the first and fourth Super Bowls.

"He told me that once the players started seeing themselves on TV, they started improving themselves," recalls Brown. "He said, 'The bigger the venue, the harder you want to play.' Teachers were doing their best before lecture capture came along, I'm certain of that. But now they have a bigger venue."

Faculty Fears & Peer Review

Fear of that bigger arena fueled some of the initial resistance to lecture capture among faculty at **West Virginia University**'s Robert C. Byrd Health Sciences Center, believes Eric Coffman, the school's manager of application development.

"At first, a lot of instructors were just plain afraid of it," Coffman reports. "They didn't want to have their faces on TV, that sort of thing. But over time, as they began hearing their students demand access to this resource, they started coming to us and asking how they could use it."

Anxiety about stepping in front of a camera can be further exacerbated if the technology is complex or hard to use. In recent years, however, lecture capture technology has become far more automat-

ed and user friendly (see "Vendor Round-up," page 28).

"Anyone with even the slightest Luddite tendencies tends to be put off by any demands beyond 'push this button,'" says Lerner. "The fact that this technology is so simple is one of the big reasons it's being used."

Toledo's Jones agrees. "There has been a co-evolution of the technology and the attitude toward it," she says. "I'm not sure you can separate the slick, easy-to-use, web-based systems we have now from the adoption rates. In fact, we should stop calling this stuff lecture capture. It can capture

> "**We should stop calling this stuff lecture capture.** It can capture anything: an event, an applied learning project, a guest speaker, debriefing sessions, interviews, or a focus group." —*Deirdre Jones, University of Toledo*

anything: an event, an applied learning project, a guest speaker, debriefing sessions, interviews, or a focus group."

And, at some colleges, it's helping faculty study one another. While no institutions appear to be using lecture capture as part of a formal faculty-review process, several schools have seen the technology emerge as a valuable tool for peer review.

"All medical school professors can view all medical school courses, carte blanche," says Coffman of the setup at WVU Health Sciences. "And part of their job is to review each other's content, to make sure they're not teaching the same thing and that something isn't getting missed. That's something lecture capture has enabled."

At Grand Rapids CC, says Brand, the technology has also been useful for creating short tutorials for faculty development, and for evaluating the performance of students in an online instructor-certification course.

"The faculty is very open in that setting," says Brand of the tutorials. "I think it's easier, because it's largely screen capture and not a talking head."

Do Students Benefit?

Ultimately, though, the benefits of lecture

10 TIPS TO IMPROVE ON-CAMERA PERFORMANCE

MODERN LECTURE CAPTURE technology has simplified the process of recording classroom discourse, but it's still up to you to provide a memorable lecture. Here are 10 tips to help you make the most of your time in the spotlight.

1
Capture a practice lecture and critique your own performance before you publish anything for student consumption, advises Deirdre Jones, associate director of innovative outreach technologies for the College of Business at the **University of Toledo** (OH). And show the test video to some trusted peers for feedback. "Keep a box of tissues handy, just in case," says Jones.

2
Focus on one—and only one—on-camera skill at a time, suggests Anne-Marie Lerner, assistant professor of engineering at the **University of Wisconsin-Platteville**: "If you have to focus on looking at the camera *and* sitting up straight *and* reducing your use of the word 'like,' you will fail at all three. Repeatedly."

3
Adjust the camera to eye level, says Chris Mizell, professor of mathematics at **Northwest Florida State College**. "I like to position my webcam on top of the overhead projector whenever possible," he says. "Otherwise, it may give the viewer the impression that he is sitting on the floor looking up at me."

4
Make sure that your lecture capture system is set up properly and actually working before class, warns Garret Brand, professor of law and director of distance learning and instructional technologies at **Grand Rapids Community College** (MI). "It's a real stressor to walk in and expect things to work and they don't!" he says.

5
Even if you're just capturing audio, remember that you're still performing for an audience, says Charles Calahan, assistant clinical professor in the College of Health and Human Sciences at **Purdue University** (IN). "Work on your vocal variety, much as a radio announcer would do," he advises. He suggests reading aloud for one minute a day to work on vocal range.

6
Make eye contact with the camera to connect with your audience, says Jones, and smile so that you look approachable, confident, and energized. "You want the audience to feel as if you are talking to them," she says.

7
Experiment with different content-delivery methods until you find one that you really like, says Lerner, who suggests that if you don't like using a tablet PC, try an interactive whiteboard: "On-camera delivery becomes exponentially easier once you've found a content-delivery method that you have an affinity for."

8
Stand up to help increase your energy, and don't be afraid to tape off your walking areas so that you stay in the shot, advises Jones: "Sitting makes most people complacent, and they end up dragging."

9
Consider investing in a backdrop if you record events or create captures in a studio. "Bare walls and light switches in the background make a good presentation seem less professional," says Jones.

10
Recognize that you are human and will make mistakes. "You will stumble over your words, occasionally lose your train of thought, spell something incorrectly—and these will be caught on camera," says Lerner. "These things happen in live classrooms, too. When they happen, just move on. Trust me, students don't care."

VENDOR ROUNDUP

LECTURE CAPTURE ISN'T A NEW CONCEPT. College and university professors have been videotaping their courses for about 25 years. But in the past 10 years—thanks to the advent of warp-speed processors, broadband connectivity, and cloud-based data storage—the technology for recording and publishing class lectures has evolved dramatically.

The current lineup of lecture capture solutions includes products that rely on proprietary hardware, specialized software platforms, web-based systems, and combinations of all three. Profiled below are a few of the principal vendors. For links to each company's website, visit *campustechnology.com/0611_lecturecapture*.

Accordent

This Polycom company offers a line of rich-media-creation software for course capture, online archiving, course preparation, and exam prep. Its lecture capture solutions allow educators to deliver live webcasts for distance-learning programs and on-demand materials for study. Students access the content via a web portal, and a management console allows administrators to control and measure how students use the materials.

Echo360

The EchoSystem features a mix of hardware and software, including an HD recorder, an Adobe Flash-based playback system, and a web portal. The system enables "a la carte recording choices" based on the type of curriculum, instructor preferences, and the technical complexity of the venue involved. Links to lecture recordings are automatically published to systems such as Blackboard, Moodle, iTunes U, and custom portals with the EchoSystem open-publishing software-development kit.

Panopto

The company's Focus system is an easy-to-use lecture capture solution that allows professors to capture, edit, stream, archive, and share recordings without calling the IT department. The system can capture streaming video, audio, PowerPoint, and screen components—all of which can be organized into presentations that students can search, reference, and review on demand from any location. The vendor touts the system as being "student-centric," with text-based search and note-taking capabilities.

Sonic Foundry

This vendor is best known for its Mediasite lecture capture solution, a hardware-based product with a purpose-built digital recorder that is designed to integrate with a school's existing A/V equipment, including document cameras, laptops, tablets, interactive whiteboards, and others. Recordings, stored in the cloud via the Mediasite EX Server, can be streamed live or made available on demand. The system includes editing tools for cutting, cropping, fading, or replacing video and slide content.

TechSmith

TechSmith's Camtasia Relay is a software system that records audio and on-screen activities from live lectures, presentations, and meetings from a Mac or PC, and automatically publishes the content to the web. Content is stored on a Camtasia Relay Server, which automatically transcribes recorded audio into captions. Professors can view and edit the captions, and even publish video with closed captions in Adobe Flash and Microsoft Silverlight. The transcriptions also make the videos keyword searchable. The system automatically adds a Blackboard or Moodle announcement when a recording is published.

Tegrity

The company bills its Tegrity Campus product as a "campuswide class-capture web service." The entire product is web based; the content repository is accessed via a browser, an iPod, or other mobile devices. The system is designed to eliminate the need for manual installations, maintenance of server and recording software, and classroom-based A/V gear. The company was recently acquired by McGraw-Hill Education.

capture—freeing up extra time for class discussion, as a study aid, and improving faculty performance—have one primary goal: to improve student learning.

Many faculty instinctively feel that lecture capture has improved student learning, even if they themselves can't prove it. Most of the claims for the technology come from student surveys, which indicate an overwhelming embrace of lecture capture. In a 2010 internal survey at the **University of Massachusetts Lowell**, 96 percent of student respondents declared that they wanted lecture capture brought to more classrooms. Another, vendor-sponsored survey of 9,000 students from more than 200 institutions revealed that 95 percent of students believe that lecture capture provides a "significant improvement in effectiveness of studying."

Student popularity doesn't automatically translate into better learning outcomes, however. As an example, Charles Calahan, assistant clinical professor in the College of Health and Human Sciences at **Purdue University** (IN), cites ones of his classes where in-class activities account for 8 percent of the grade. "If a student is really concerned about his grade, he's going to be in class," he explains. "But I think a student could miss every class period, catch the content on Echo360, and probably get a B or B+." As a result, Calahan is reconsidering how he currently uses lecture capture, and may alter some of his teaching practices.

For many faculty, lecture capture boils down to this: At its most basic, the technology is useful as a study aid, and provides students with a whole new level of flexibility—a flexibility that some will undoubtedly abuse. Used to its fullest potential, however, lecture capture goes beyond this, giving faculty the ability to restructure the very format of their classes and how they teach them.

"What's the most constrained resource in higher ed?" posits Harvard's Laster, in response to a question about the potential benefits of lecture capture. "Faculty time."

How an institution's faculty use that extra time is what will probably set the good teachers apart. **CT**

John K. Waters is a freelance writer based in Palo Alto, CA.

The Migration to Greater Efficiencies

When this large Florida college began upgrading its technology, it stepped out of the norm and gained more powerful technology, higher energy efficiency, easier IT management, and a much better financial deal overall.

The time had come for Palm Beach State College—with 52,000 students, one of the largest in Florida—to plan for refreshing the computing technology in use at its four campuses. The year was 2008, and the college was burdened with dated equipment: thousands of aging desktop and notebook computers in labs, classrooms, and faculty offices. Most of those machines were between four-and-a-half and five-years old, running Windows XP (a dated operating system), and built by one vendor, Dell.

Public institutions in the state of Florida all tended to buy their equipment through a purchasing program that locked them into Dell if the purchase was a PC. "Everybody just used it," Palm Beach State CIO Anthony Parziale said. "The program gave a percentage off of list price, and Dell fiercely defended it."

Palm Beach State had been a Dell customer for years, but Parziale felt restricted by the traditional way of doing things. Parziale knew the college needed to improve its technology infrastructure to support faculty, staff, and students with the newer computing tools they required for work and learning.

"As we were debating our options, HP came to us with one of those offers you can't refuse," Parziale said. Not only did HP promise to help the college upgrade to Windows 7—something the institution had been wanting to do—it offered a lease-purchase arrangement on AMD-powered HP computers so compelling even the college's CFO couldn't walk away from it.

Recalls Parziale, "HP proposed a deal that would replace all of our computers and get them all on the same cycle. The interest rate was incredible." The college leased 4,000 computers. About 60 percent of those were HP Compaq 6005 Pro Microtower PC desktops and 40 percent HP Compaq 6535b Notebooks.

Shortly after Palm Beach signed on with HP, Miami Dade College, the largest in the state with 165,000 students, did the same.

The school also wanted to enhance its management capabilities without having to hire additional personnel or add to an already highly complex IT environment. Since the AMD-based PCs were built to the Desktop and mobile Architecture for System Hardware (DASH) 1.1 standards, IT was able to take advantage of web services for managing the hardware remotely. Behind the scenes, the college implemented Microsoft's System Center Client Management Suite, an integrated set of programs for managing large numbers of Windows-based computers.

"Now we get to manage everything remotely, push patches, and look at utilization stats," says Parziale. "We're always trying to put new computers out there, but after they get in classrooms and labs, we're usually not very good at evaluating their usage. Now we have the ability to do that."

Palm Beach will also take advantage of a change enabled by Windows 7 in how software is distributed and managed during the software upgrade process. The institution intends to implement VDI, a virtual desktop infrastructure. This will allow IT to keep faculty and staff software up-to-date by delivering it to those machines from a central location; it also ensures users will be able to work on the latest versions of their applications.

Parziale believes that staying ahead of the curve has to be a top IT priority. As the department wrote in its memorandum to users about the transition to the new HP computers equipped with VISION Pro Technology from AMD: "They provide our faculty and staff the best tools for teaching today's students and equipping them with the necessary knowledge to compete in the global market. The improvements we make today will confer multiplied benefits in the future through greater efficiencies and more effective teaching and working."
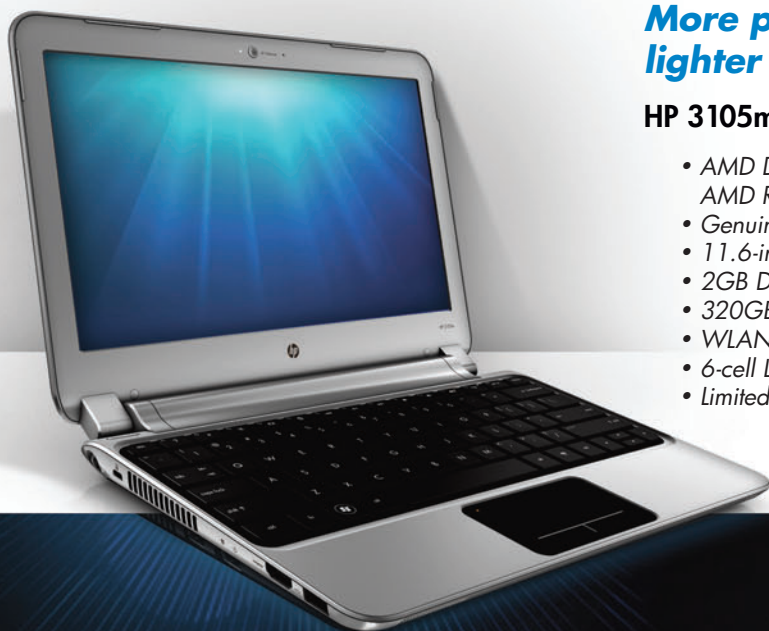
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Everybody On

Four schools use cutting-edge design principles and technology to create next-gen learning spaces, with a focus on collaboration and student engagement. By Jennifer Demski

THE SAGE ON A STAGE is looking increasingly like a potted plant. While there will always be a role for a great teacher who can command a room, colleges and universities today are putting greater emphasis on student collaboration, small work groups, and interactive learning. Unfortunately, the classrooms of yesterday, with their focus on a single instructor at the front of the room, cannot deliver on the vision of tomorrow. Here, *CT* profiles four schools that are using technology, new design concepts, and flexible classroom furniture to reinvent their teaching spaces. ▶

ACES OF

The Hiperwall system at La Sierra University (left) and Town Hall classroom at Kansas State University (right)

SPACE

Meeting in Town Hall

The School of Leadership Studies at **Kansas State University** reaches about a quarter of KSU's freshmen each year through its Introduction to Leadership Concepts course. Considering there are more than 3,500 freshmen, it's not surprising that class sizes for the introductory course are large—and come with all the drawbacks that large classes traditionally entail. So, when administrators started planning for a new Leadership Studies building, they saw an opportunity to re-evaluate the course experience. Their model? The traditional town hall meeting.

"We wanted a space that had the capacity that we needed, but retained a feeling of intimacy, was acoustically designed so that every student had a chance to participate and be heard, and could transform physically to allow for small group discussions," explains Mary Tolar, director of the School of Leadership Studies. "Even in a large lecture hall, it's really important that the students engage."

Planning: Many of the decisions made during the planning process were inspired by the story of a prominent alumnus who, says Tolar, was "almost invisible" in his freshman introductory courses. Working with a team, Tolar and Rebecca Gould, director of KSU's Information Technolo-

gy Assistance Center, searched for design elements, acoustic materials, and technology that together would create a space where even the shiest students would feel comfortable participating.

Key Elements: The room is designed in a 150-degree arc, with four tiered seating platforms, each with two rows of seats and tables. The first row of seats on each platform swings out and rotates to face the second row for small-group and partner work. Each seat is equipped with a power outlet for student laptops and mobile devices.

The room's wide arc allows students on either end of the room to hear one another, but it does require that presentations be displayed by two synchronized, ceiling-mounted projectors onto two motorized screens. Fabric wall panels, an angled rear wall, and a dual-curved parabolic soffit over the podium further enhance the room's acoustics.

The custom teaching podium, with Crestron's touchpanel control system, incorporates a Dell computer, video input for a laptop computer, a Denon DVD player, and an Elmo P100N document camera.

Pilot and Feedback: Pilot testing of the Town Hall took place during the spring semester in 2009: It involved two sections

of the Introduction to Leadership Concepts course and a cultural anthropology course taught by professor Michael Wesch, whom Toler refers to as "our campus educational-technology guru." The testing affirmed many of the decisions made during the planning process—the dual projectors, the power outlets at student seats, the transitional seating, and the acoustic design all made a significant impact on student engagement.

Meanwhile, Wesch used his experience in the room to help Tolar, Gould, and their team put together best practices and instructional guides for professors who would be using the room in the future. Some of the takeaways? The room should adapt to the instructor's teaching style, not the other way around. To accommodate teacher preferences, for example, the podium can easily be moved to four different locations.

Looking Ahead: Since the fall semester of 2010, the Town Hall has been fully booked. Even though the average section size of each Introduction to Leadership Concepts course has gone from 100 students in its former venue to 212 students in the Town Hall, professors report that students are more engaged. "It's harder for the students to be in that space and not be engaged," says Toler, "partly because of the way the faculty has adapted to teaching in that space, and partly because of the way the space is designed."

Collaborative Learning Lab

La Sierra University in Riverside, CA, wanted to increase the effectiveness of its science programs by creating a high-tech, high-impact learning space. Nathan Brandstater, an associate professor of chemistry and biochemistry, sought to create a learning space where students would no longer be "passive spectators" or even "active learners." Instead, students would become "spotlight academic performers." "I wanted students to get the

THE HIPERWALL SYSTEM at La Sierra University turns students into "spotlight academic performers," allowing them to use their own computers to control displays anywhere in the room.

sense that when they came to class, they were going to be expected to perform," says Brandstater.

Planning: Brandstater and his team spent several months researching technology for the space without finding anything that could deliver what they wanted. Eventually, they discovered Hiperwall, an interactive-display technology developed at the **University of California at Irvine**. Within 48 hours of meeting Stephen Jenks, then a professor at UCI and Hiperwall's creator, Brandstater had signed a requisition for the Hiperwall software and hardware. "Once the technology piece fell into place, things moved really fast," says Brandstater. "There was a month of frenzied construction and a month of getting the technology pieces and furniture in place. Then the room was up and running."

Key Elements: The Hiperwall system is a display-wall management system that can take feeds from a number of devices and display them in real time on a network of displays in various combinations. La Sierra's classroom features 13 46-inch Samsung HDTV displays: Nine of the displays form a three-by-three interlaced display wall, measuring approximately 6 feet high by 10 feet across, at the front of the

GEORGIA TECH'S Classroom 2.0 space utilizes a 360-degree teaching wall with whiteboards, retractable projector screens, and recessed flat-panel displays.

classroom; the other four displays are scattered throughout the rest of the room.

Faculty and student laptops connect to the Hiperwall control system via wireless LAN. Once a computer connects to the classroom's wireless access point, the Hiperwall software "discovers" it, allowing the instructor to display that computer's screen on any or all of the room's 13 HDTVs. Each of the displays has 2 megapixels of display area, meaning that the interlaced display wall delivers a resolution of 18.2 megapixels—great for displaying large, high-resolution images at their native resolution. Modular desks and

chairs—all on wheels—complement the technology and promote small-group work and flexibility.

Pilot and Feedback: La Sierra began holding general chemistry courses in the room in the fall of 2009. Surveys of students who've taken courses there reveal an encouraging response. "Students appreciate having the ability to learn about the visual aspects of chemistry," says Brandstater of the survey results. "Making

chemistry visual is a continuous challenge—it's inherently a spatially oriented field of study. Whenever we can use different approaches to understanding the spatial aspects of chemistry, it's a big plus for the students."

The room is also pushing students to use their own computers, which was one of the major goals of the project. "We didn't want to put a whole bunch of computers in a lab and watch them grow obsolete," says Brandstater. "This space is getting students to use their own computers in ways that they probably don't normally do."

Students now bring their own laptops to

class, and the furniture is arranged so students can work together in small groups. When the class is solving a problem, the instructor is able to display the work from each of the various student groups on the large screens. "That way, I can do a 360-degree turn around the room and see how all the groups are doing in their problem solving," explains Brandstater. "It's really an important dimension of developing students' information technology lit-

eracy to force them to use their own computers to do scientific work."

Looking Ahead: As word of the Hiperwall system has spread, professors from disciplines beyond chemistry have begun using the space. "There's a faculty member in the biology department who's using the room to teach a bioinformatics course," notes Brandstater. "That kind of application really excites me, because of the types of clear, high-resolution images that can be displayed in this room."

The room has also become a showpiece for prospective students and their parents. "The room's got a lot of sizzle," remarks

"I wanted students to get the sense that when they came to class, they were going to be expected to perform."

—Nathan Brandstater, La Sierra University

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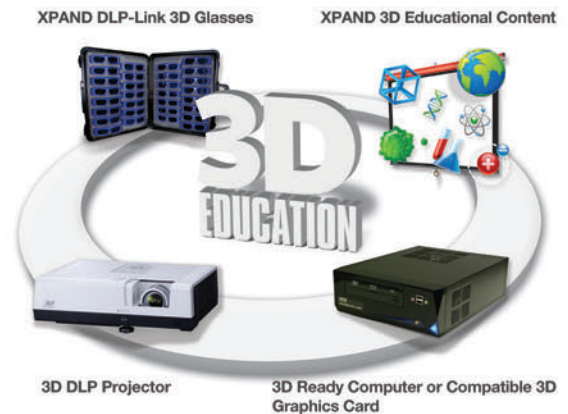
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Brandstater. "People come into the room and their jaws drop."

Classroom 2.0

In 2008, after using the same basic classroom design for about 10 years, **Georgia Institute of Technology** began to look at ways to revamp its learning spaces to support new teaching styles.

"We wanted to move away from the model of having the faculty member at the front of the room with a teaching wall, to a more learner-centered classroom where the students are in control of both the space and the learning environment," explains Donna Llewellyn, director of the Center for the Enhancement of Teaching and Learning (CETL).

The goal was to create a well-lit classroom complete with mobile furniture and access to the internet, power outlets, and whiteboard and projection spaces for all of the students. Additionally, the school wanted to resolve one of the biggest points of failure in the former classroom design—the connection between the technology embedded in the teaching podium and its floor box or wall point. "The podium is often referred to as a bunker that the faculty member hides behind," explains Chris Hamlin, technical project director for the Office of Information Technology (OIT). "We wanted to

slim down the podium, and to reduce some of those connections."

Planning: The planning process was a collaborative effort among OIT, CETL, and the Office of Capital Planning and Space Management. The Georgia Tech team incorporated design concepts from **North Carolina State University**'s SCALE-UP and **MIT**'s TEAL projects, as well as the **University of Minnesota**'s Active Learning Classrooms. A common element in all three concepts is the installation of whiteboards and flat-panel displays around the full perimeter of the room, so students can have control of a teaching wall at any time, rather than rely on one teaching wall controlled by the faculty member at the front of the room.

Since space is at a premium on campus, Georgia Tech chose to pilot the Classroom 2.0 concept in a rarely used basement classroom in its Engineering Science and Mechanics building.

"We figured it was a space that we could take offline for two semesters to get the renovation and installation done," says Hamlin.

Key Elements: Whiteboards surround the room, creating a 360-degree teaching

wall. Two Sanyo PLC-WTC500 5,000-lumen WXGA projectors display images on retractable screens mounted above the whiteboards in the front and rear of the room. Recessed into the room's sidewalls, three LG flat-panel HDTVs display individual and small-group work directly from students' computer screens. When not in use, the HDTV displays are hidden behind sliding whiteboard panels, ensuring an unbroken perimeter of teaching space. Modular tables and chairs, all on wheels, allow for flexibility and collaboration. To decrease failure rates, all connections between the major A/V components in the teaching podium and the rack closet are DVI over Cat 5.

Pilot and Feedback: The room was up and running for the spring semester of 2010. A few professors held their classes in the space, testing the new format and technology, and providing feedback. The number of faculty requesting the space has expanded each semester since.

"Faculty members would tell me that they couldn't get their students to leave at the end of class time," recalls Llewellyn. "The next class would be at the door, and nobody wanted to get up and leave. That says a lot."

According to Llewellyn, the faculty in languages, psychology, and public policy like the room because of the modular furniture, which makes it much easier to foster discussion groups; they can also project working documents on the flat screens and collaboratively edit and produce projects. Engineering and science faculty, on the other hand, are most enamored of the room's collaborative possibilities, which play a major role in their disciplines.

Some adjustments are being made to the space, inspired by input from the pilot process. For example, faculty requested

IN THE UNIVERSITY OF OKLAHOMA'S Super Studio, modular glass walls double as floor-to-ceiling marker boards.

that speakers be added to the three LG HDTV small-group displays so students can create collaborative videos or presentations with sound. OIT is researching the best way to mount the speakers so they won't disrupt the whole class.

Looking Ahead: It won't be long before additional Classroom 2.0 learning spaces are available. In August, Georgia Tech is opening its new Undergraduate Learning Commons, which includes three more Classroom 2.0 learning spaces. Seventeen courses are already assigned to the rooms.

X Marks the Spot

The College of Architecture at the **University of Oklahoma** started construction of a

Steelcase's LearnLab configuration. The system is most commonly used in the corporate arena for conference rooms and teaming spaces. "As we looked at the Steelcase system, we became excited about the process of trying to move that into the design and studio arena," recalls Hoehn.

Her team then adopted the same LearnLab concepts for the smaller studio space, while adding more technology. Measuring just 14 feet by 16 feet, the Super Studio, as it is known, has modular glass walls and an open ceiling. It sits in the center of the temporary space's studio environment, surrounded by drafting tables.

Key Elements: The Steelcase LearnLab is designed so there is no front of the class-

classrooms opened in January 2010, the spaces have been so successful that Hoehn jokingly says she'd revolt if she had to go back to a traditional classroom. "With the X configuration of the tables in the LearnLab, I'm constantly moving through the space, and I can be behind a student quickly," she explains. "There's nobody sleeping during any part of the class. They're working in teams. They're using the space as a professional environment, just how an actual architecture firm would use it."

For its part, the Super Studio has become a hotbed of collaboration, with students from different disciplines interacting not only with each other, but also

"Faculty members would tell me that they couldn't get their students to leave at the end of class time."

—Donna Llewellyn, Georgia Institute of Technology

new building in 2008. The work coincided with the arrival of Dean Charles Graham, who initiated a move toward more high-tech, forward-thinking learning environments. Rather than wait for the new building to be completed, the college decided to create a prototype classroom and a studio space in the temporary area where classes were being held.

"We didn't want to be starting from the ground up and hitting a learning curve when we got into the new building," explains Graham. "We wanted to have at least a year to use these new technologies and approaches to teaching and refine them."

The new spaces had to be able to accommodate long lab sessions where students work, study, and create for three to four hours at a time. "We needed to figure out a way to make a space for students in these intensive design and architecture courses that was collaborative, that used technology in an enriching way, that was exciting and engaging, but was also comfortable," says Christina Hoehn, an associate professor who served as the project lead.

Planning: For the classroom space, Hoehn and her team researched several furniture systems before committing to

room: Modular tables and chairs are arranged in an X configuration. Three projectors and screens are triangulated within the space, visible to students from anywhere. The three projectors display images from a ceiling-mounted video camera or from student and faculty laptops. The room features 10 Huddleboards, portable whiteboards that can be used at the tables and then hung on tracks around the rooms. The work done on the Huddleboards can be digitized using a CopyCam scanner and then saved to the class website, transferred to student flash drives, or printed on the lab printer. A PolyVision Eno interactive whiteboard with remote capabilities caps off the technology.

The smaller Super Studio features two plasma HDTVs that display feeds from a Steelcase Media:scape interactive table, which has switches for up to six student laptops. Microphones installed at the table enable videoconferencing. Students can display images, video, and music from their iPod, iPhone, or iPad using a dock connected to the plasma screens. The room also includes a PolyVision Eno and seating for 20 students, and the glass walls double as floor-to-ceiling marker boards.

Pilot and Feedback: Since the pilot

with students at the **Dublin Institute of Technology** (Ireland) via Skype.

Design tweaks include installing a dedicated computer in each space to avoid display issues that arose when faculty connected netbooks or Macs (which have a different resolution than PCs) to the plasma screens and projectors.

Looking Ahead: When the College of Architecture building opens in fall 2011, it will feature a number of LearnLab and Super Studio spaces. Hoehn's team is also looking for more areas to install Steelcase Media:scape table configurations with plasma screens and switch connections, so students can have access to informal collaborative workspaces outside scheduled class times. **CT**

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

RESOURCES

For links to more information on **MIT's TEAL** and **North Carolina's SCALE-UP** projects, the **University of Minnesota's Active Learning Classrooms**, and the products and vendors mentioned in this article, go to *campustechnology.com/0611_classroom.*

No safety program can stop every campus threat, but proper preparation can mean the difference between life and death. *CT* looks at the three key components of a successful program. By Dian Schaffhauser

BRACING FOR DISASTER

A FREAK BLIZZARD, A MENTALLY ILL AND ARMED student, a record-breaking flood. No matter how idyllic your campus may feel, no matter how cocooned the ivory tower, disaster can strike. It *can* happen to you. Even if you're prepared, such an event will be an appalling ordeal. If your campus is unprepared, though, it comes like a sucker punch, potentially turning a crisis into a tragedy of unimagined proportions—and causing reverberations that will be felt for years.

Obviously, it's impossible to guard your campus against every threat, but you can be ready to react and respond. An effective disaster program is built on three cornerstones: developing a comprehensive safety plan; testing the plan; and deploying the technology to prepare for and respond to a crisis. Finding the money to pay for all of this could be considered the fourth cornerstone, but the truth is that funding tends to become available as a result of solid planning and testing. ▶

Pictured: a Tulane University housing facility in the aftermath of Hurricane Katrina

1) Make a Plan

Without a comprehensive plan, your program is dead in the water—just try to win a grant to buy equipment without one. A campus-safety plan works out the who, what, when, where, and how of emergency response. A well-rounded planning effort takes into account four aspects of every emergency:

- **Risk assessment:** Examines the likelihood that a given emergency will happen, and lays out the assumptions that are used in planning a response.
- **Prevention and mitigation:** Addresses what steps need to be taken before an identified emergency happens, to prevent it from having an impact on people, assets, and operations.
- **Emergency response:** Maps out what the school needs to do when an emergency occurs.
- **Recovery:** Guides operations and the resumption of business, once the immediate emergency demands are over.

According to Sharlene Mielke, coordinator for disaster recovery and business continuity at **Northwestern University** (IL), the whole point of the planning process is to eliminate guesswork and provide an organized, considered approach to all aspects of the emergency response.

At Northwestern, several people are responsible for plan development and training, which requires a level of investment that is not feasible at all institutions, especially smaller campuses. Yet Mielke believes that all schools need to find some way to focus on the issue of campus safety: If it's not through dedicated personnel, a well-structured campus-safety committee can handle the job. For one, it shows that the institution isn't in denial, and also sends a message of commitment to the entire campus community. It's a big mistake to believe that something bad "is not going to happen here," says Mielke. "Once you overcome that block as an institution, you're able to get things done quicker and easier and faster with a lot more calm. You don't have to create that sense of urgency to get out of the starting block."

Northwestern's emergency plan runs 50 pages. Broad, institution-wide plans feed into individual documents relevant to specific buildings and departments. For faculty and staff in these areas, the plans are heavy on detail, listing phone numbers and laying out procedures, such as who can terminate an evacuation in process or what a person calling 911 during a shooter scenario should say to the dispatcher. "It covers pretty much everything from the moment of the crisis onward and drives our immediate response," notes Mielke.

David Burns, director of the Emergency Management Office at the **University of California, Los Angeles**, has a slightly different philosophy. He believes the campus-

> ## "The goal of testing and exercising is not to find out if it works, but to determine how it doesn't." —*Sharlene Mielke, Northwestern University*

safety plan should be "broad and simple" and used to identify common principles. If the plan is extremely rigid, he believes, it will have single points of failure, "so it only takes one mistake to make your plan fall completely apart."

"Every disaster is going to displace people, create mass casualties, mass fatalities," Burns explains. "It's going to create situations where you need to displace and evacuate people, which creates a sheltering issue, which causes need for medical treatment, food, water, sanitation. These are common characteristics of every disaster. Your plan should focus on those. That's how you keep it simple, and that's how experienced emergency managers address their plans."

2) Test, Test, Test

The planning process is just the starting point, of course. Once a plan is developed, it needs continual testing and revision. This includes conducting exercises to help participants become comfortable with the roles they will play during an actual emergency.

"Adults learn more by doing than reading," says Mielke. "An exercise breeds plan familiarity." It also exposes holes in the plan. "The goal of testing and exercising is not to find out if it works, but to determine how it doesn't," she tells people who attend her campus-safety presentations.

UCLA's Burns concurs. He spends a lot of his time working with staff and running small drills. "Those are the things that

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really matter in a crisis," he declares. "You program people to respond by habit. That's the important piece. If you can't handle little things, then forget the big stuff."

The value of practice was vindicated recently at Northwestern when the campus faced February's great Midwest blizzard. In that event, the threat was determined to be "global," meaning that it encompassed the entire campus. Under Northwestern's planning protocols, such a threat required the university's Threat Assessment Group (TAG) to kick into gear. TAG's focus is to monitor the situation so that "we can try to get ahead of what our response might be," explains Mielke.

In the run-up to the blizzard, representatives from public relations, facilities, IT, campus police, the executive offices, student services, and university services all gathered—in person or by conference call—to apprise one another of what was happening in their particular areas.

"We were so prepared, so ready," recalls Mielke. "We had people waiting in the wings, ready to spring into action. Everybody gave a report of the situation since the last meeting, and we were having meetings about every three hours: 'OK, this is where we are, and this is what we plan to do next.'"

In a nutshell, communication was key. As it happens, the blizzard had little impact on Northwestern. "We were lucky," notes Mielke. "We didn't have any major effects. No major power outages, just some minor ones. Nothing extraordinary." In fact, during the third-worst snowstorm ever recorded in Chicago, 500 Northwestern students were having a snowball fight.

Testing an emergency plan may also be the most effective way to secure funding. At UCLA, Burns used an exercise to build a business case for upgrading the school's small emergency operations center (EOC).

In January 2010, the university hosted the Quake 2010 Functional EOC Exercise to test its earthquake-preparedness plan. During that event, UCLA simulated what all emergency personnel would be doing eight hours after a major earthquake. Suddenly, 40 people from multiple divisions were crammed into a small space and experienced the inadequacy of the air conditioning and electrical systems; how out of date the furnishings were; how poorly communications worked; and how insufficient two televisions were for monitoring media reports.

> ## "When an agency is putting on an exercise, it creates opportunities for partners in the area to tag along and share resources." —*David Burns, UCLA*

"As we were gathering information, folks were writing it on a whiteboard," explains Burns. "That takes time. Then, you had to carry it to another room next door or up several floors and rewrite it. By the time you had copied this information from whiteboard to whiteboard, 20, 30, 40, maybe 45 minutes had passed. The information you had posted was old and maybe outdated." These delays really stretched the patience of the emergency responders participating in the exercise.

To compound the problem, it took two hours to set the room up to be ready for an emergency.

"I can sit in my chair as emergency manager and say we've got a problem," Burns declares. "But when I put the people in the room, *they* experience the problem. I don't have to say a word. After the exercise, I had 40 people who had completely bought in and said, 'This has to be fixed. This isn't going to work.'"

By July, seven university departments had put funds into an EOC upgrade. EOC staff began training on operations in the new center in November. It was ready for duty by January 2011.

In the event of an emergency now, laptops are yanked from a mobile cart and plugged into each seat. When somebody checks in with Burns at the door, he hands them an assignment and a mobile voice over IP phone, and they can get to work. Every position has a good view of the whole room, which now has wall-sized whiteboards and eight large displays, all of which are wired to monitor TV news or

AT UCLA, the results of an earthquake-preparedness exercise helped build a business case for upgrading the school's emergency operations center.

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can be used for internal coordination. The room can be fully operational in 15 minutes. When there's no emergency, it pulls double duty as a staff-training facility.

Not all institutions can afford the $10,000 that UCLA spent on its comprehensive safety drill, but this doesn't mean they can't garner that experience elsewhere. Burns believes that schools can learn plenty—and use the results to make a business case for funding—by participating in exercises staged by other organizations, such as law enforcement, airports, and hospitals.

"When an agency is putting on an exercise, it creates opportunities for partners in the area to tag along and share resources,"

Management Agency.

Through it all, advises Burns, remember that the point of exercises is to "do a gap analysis, to find the cracks and problems before a real event happens." If you don't find problems, "you're not exercising hard enough."

3) Procurement

Communications lie at the heart of any emergency-response system. As the experiences of both UCLA and Northwestern show, planning and testing efforts revolve primarily around coordinating responders

to that of Northwestern. "We have 15 resources we use to communicate with the campus, but we're still not where we want to be," Burns says. "I'm going to put another siren on top of a building. That process takes four months to plan and a month to construct. We're still working on our EOC systems. Those will take a year to develop and fully mature."

If you don't uncover problems during a campus safety exercise, says UCLA's Burns, you're not exercising hard enough.

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he explains. "They make the invitation. You share responsibilities."

When all is said and done, though, nothing can substitute for your own on-campus exercise. Exercises aren't difficult to do, says Burns. It just takes planning time—about three to four months. "You can't just say, 'We're going to do this in two weeks,'" he notes. "You have to have lead time. You have to write your message-sequence list. You have to vet it. You have to develop your objectives." In Burns' opinion, the best source of training materials and templates is the Homeland Security Exercise and Evaluation Program (*hseep.dhs.gov/pages/1001_hseep7.aspx*), available through the Federal Emergency

and maintaining up-to-date information. If you haven't already developed a comprehensive safety plan, though, obtaining funds for this equipment—either from your institution or via a grant—is going to be a long shot.

At Northwestern, emergency communication channels come in multiple forms. When the campus community needs to be alerted, notifications can go out via text, outdoor alert system, web pages, bulk e-mail, automated phone and voicemail, in-building fire alarms, the campus radio station, two-way radios, local media, departmental phone trees, and even word of mouth, handmade signs, and runners.

The latest item on Mielke's shopping list is a tool to maintain digital versions of the institution's emergency-response plans—continuity, communications, evacuation, and other documents—that need to be accessed quickly when a disaster occurs. The expenditure has been approved by management; the procurement is still under way.

The array of communications mechanisms at UCLA is fairly comparable

Burns would also like to improve his indoor mass-warning capabilities by adding indoor signs that are both audible and have strobes to meet ADA requirements. But the cost of installing these signs on multiple floors in 175 facilities is estimated between $2 million and $4 million.

UCLA is also battling to fill in coverage gaps. "We have rooms without cellular capabilities," explains Burns. "If you go into a room, you'll get zero bars on your phone. Those rooms have to be wired for Power over Ethernet. If they don't already have backup-generator capacity, then they won't work when electrical failures occur. All that infrastructure has to be built in." As an example of the financial challenge he faces, Burns estimates that it could cost $500,000 to extend full coverage to a single 20-story building.

Even so, Burns still carries a wish list of components he'd like to add to his campus-safety arsenal. When an emergency hits, he says, "everybody will come in and say, 'What can I do to help, and what will it cost?'" At that moment, he'll be able to pull out his list. "I'm always ready. Anybody who is worth their salt, they have it waiting." **CT**

Dian Schaffhauser is a senior contributing editor of this magazine.

CAMPUS-SAFETY PLANS ONLINE

These six universities have their campus-safety plans online. For links to each of the plans, visit *campustechnology.com/0611_safety*.

- Jacksonville State University (AL)
- Kent State University (OH)
- Northwestern University (IL)
- University of California, Los Angeles
- University of Hawaii at Manoa
- Virginia Tech

Campus Technology **Preshow Exclusive:**

InfoComm 2011

This month in Orlando, FL, the A/V industry's largest trade show showcases everything from projectors and displays to digital signage and video streaming. Here are 20 must-see products.

Ultra-Narrow Display

NEW!

The new 55-inch *X551UN* ultra-narrow display from **NEC Display Solutions** is a professional-grade, large-format display designed for the rigors of 24/7 operation. Features include LED backlighting, full high-definition resolution (1,920 x 1,080), and a 5.5 mm distance between active screen areas. The *X551UN* can be deployed in video walls of up to 100 displays (10 x 10), and offers Intel's Open Pluggable Specification (OPS), the first industry-wide standardization in option slots that facilitates installation, use, and maintenance of digital signage. Estimated street price: $7,799. *necdisplay. com*, booth 1901 ▶

NOTE: Booth numbers were confirmed at press time but are subject to change.

Washable Headphones and Headsets

Califone International's new *Titanium Series* line of headphones and headsets can be completely immersed in soap and water (after the cord has been detached) for easy cleaning. To maintain safe hearing levels, the playback volume is restricted to the ASHA-recommended maximum of 85 decibels (this feature can be disarmed for hearing-impaired students). In addition, the devices' ear cups provide passive ambient-noise rejection to block external distractions. A variety of cord options are available, including USB, 3.5 mm, and dual 3.5 mm plugs. Headset prices range from $52 to $92; headphone prices, from $36 to $76. *califone.com*, booth 4117

Widescreen Interactive Pen Display

The *DTU-2231* HD interactive pen display from **Wacom** features a 21.5-inch, 16:9 widescreen LCD screen and a cordless, battery-free pen that allows users to annotate presentations, create hand-drawn images, capture handwritten notes, and more. A new, customizable radial menu provides on-screen access to PowerPoint tools, eliminating the need to memorize keyboard shortcuts or search for PowerPoint menus in the middle of a presentation. Other features include a built-in DVI-I pass-through connector that handles digital or analog input and allows mirroring directly to a projector or other display; an internal scaler that can take video-input signals in different resolutions and display them in their native resolution and aspect ratio; two USB ports; anti-glare surface; and an adjustable stand that allows for 15 to 72 degrees of incline. MSRP: $1,899. *wacom.com*, booth 2447

Capturing Class Content

Mediasite by **Sonic Foundry** automatically records classroom instruction and other campus events as interactive multimedia presentations that combine video and audio with any visual materials shown by the presenter (such as material from a laptop, tablet PC, interactive whiteboard, or document camera). *Mediasite Recorders* can be scheduled to automatically start and stop recording, or presenters can control their own recordings from a classroom control panel. Presentations can be streamed live or on demand, and can be automatically published to searchable online *Mediasite Catalogs*, a learning management system, or any web portal for anytime/anywhere access. Users can also create podcasts for on-the-go playback. Contact vendor for pricing. *sonicfoundry.com*, booth 3375

Group Collaboration Tool

Tidebreak's *ClassSpot PBL* software combines the interactive presentation capabilities of the company's *ClassSpot* product with the small-team collaboration features of *TeamSpot*, providing an interactive teaching wall for guided

instruction and separate areas for small-group work. As students develop material in their group environments, they can send their results to the teaching wall for group presentation and critique; others in the class are able to manipulate shared information from their seats by moving their computer cursor up to the front screen. Faculty can distribute documents to student teams with a simple drag-and-drop gesture. Contact vendor for pricing. *tidebreak.com*, booth 1690

High-Resolution Touchpanels

Extron's *TLP 1000TV* (tabletop) and *TLP 1000MV* (wall mount) *TouchLink Touchpanels* feature a 10-inch color touchscreen, 1,024 x 600 resolution, and a thin-bezel design. They also incorporate power over Ethernet, allowing the devices to receive power via

the Ethernet connector. To provide integration flexibility and better cable management, an integrated MTP twisted-pair receiver accepts S-video or composite video and audio input signals over standard Cat 5 cable, minimizing the number of connections at the touchpanel. The full-motion video display supports preview and monitoring applications. Contact vendor for pricing. *extron.com*, booth 1501

Extra-Large Screens

Draper has expanded the company's *Access* line of motorized, ceiling-recessed projection screens with the *Access XL*. Available in nontensioned sizes up to 20 feet wide and tab-tensioned sizes up to 18 feet wide, the *Access XL* uses the same sliding adjustable mounting brackets as other

Access screens, and includes the company's "case first, screen later" feature: The screen case can be installed first to avoid screen damage during construction. The *Access XL* conceals the screen surface completely when not in use, and its motor-in-roller assures quiet and smooth operation. Contact vendor for pricing. *draperinc.com*, booth 3230

NEW!

Entry-Level Visualizer

The **WolfVision** *VZ-3 Visualizer* is a live-camera system that can display two- and three-dimensional objects on any computer, monitor, projector, or videoconferencing system. The device features a 1-CCD camera boasting 30 frames per second and sRGB color, with SXGA, WXGA, and 720p native output resolutions. The *VZ-3*'s 12x optical zoom enables it to display objects as small as a postage stamp at full-screen size. Other features include a high-brightness LED light system, auto-focus and iris, low power consumption, reflection-free working surface, flexible mounting options, and anti-theft device. Contact vendor for pricing. *wolfvision. com*, booth 3611

Greener Lamp Replacement

Projector Lamp Services' *RelampIt* service provides an economical and environmentally friendly lamp-replacement option: The company takes an existing projector lamp, reuses the housing, installs a new bulb, and recycles the spent bulb—ensuring that the refurbished lamp is an exact fit for the projector and reducing replacement cost and waste. The refurbished lamps are covered by a full 90-day

warranty. Cost varies by lamp make and model; the average relamping cost for a front projector is $250 to $300. *relampit.com*, booth 2449

NEW!

Video Streamer/Recorder

Launching at InfoComm, the **Haivision** *Viper Multi-Stream IP Video Streamer/ Recorder* is a compact, integrated appliance for capturing, streaming, reviewing, distributing, and publishing multi-stream video content. The device can capture and distribute multiple HD video sources or HD video and computer display sources simultaneously, and supports record/review/publish and live-streaming applications. A touchscreen provides a simple user interface that can be programmed to serve an institution's particular publishing needs. The *Viper* can be integrated as a remote contributor to Haivision's *Furnace IP* video system, enabling a distributed recording architecture without relying on central network video recording capacity to accommodate every user. Contact vendor for pricing. *haivision.com*, booth 4747

NEW!

Switcher for Multiple Displays

The *AT-HD-V1616M* from **Atlona** is a 16 x 16 HDMI matrix switcher with RS-232 and IR remote. Designed to work as a switcher for multiple sources and displays, the device has a maximum bandwidth of 6.75 Gbps and will support video in multiple resolutions of up to 1080p. It allows any video input to be routed to any output, the same input to be routed to all outputs, or any combination thereof— eliminating the need to constantly move around video input and output cables. Other features include full 3D support, a redundant power supply, and equalized inputs/outputs. RS-232 control allows the switcher to be managed by third-party control systems such as Crestron, AMX, and Control4, or any computerized software/hardware control systems. MSRP: $12,999. *atlona.com*, booth 3671

In-Wall Touchpanel Controller

The *RK10* in-wall touchpanel controller from **RTI** can take full command of a room's electronics, lighting, HVAC, security, and more. The device features a 10.2-inch widescreen LCD touchscreen, fully cus-

tomizable interface, and Intel Atom processor. Communications options include a built-in wired and wireless (802.11b/g) Ethernet connection for easy access to network security cameras, web browsing, convenient programming, and full two-way communication with RTI *XP* series control processors. Flexible mounting options allow the *RK10* to be flush- or surface-mounted on a wall, as well as attached to standard VESA-style display mounts. MSRP: $3,499. *rticorp.com*, booth 3163

Next-Gen Digital Signage Platform

X2O Media's next-generation *Nitro* graphics platform provides new display possibilities for any kind of dynamic digital signage content. *Nitro* combines graphics and real-time animations with features such as "Channel-in-Channel" capability (for overlapping channel layers) and integrated 3D support for the creation of 3D objects and tickers. The platform supports multitouch touchscreens and any-resolution output, from single screens to multiscreen command centers and video walls. X2O will be introducing products powered by *Nitro* throughout 2011. Contact vendor for pricing. *x2omedia.com*, booth 4983

Widescreen Portable Projector

The *LV-8225* LCD portable projector from **Canon** offers native WXGA resolution for 16:10 widescreen images and 2,500 lumens of brightness. With the push of a button, the device automatically identifies the type of input signal (video or computer) and synchronizes the projector's display with the computer screen's pixel configuration. An auto vertical keystone feature adjusts the projected image when the projector is facing the screen at an angle. Other features include an extended lamp life of up to 6,000 hours in quiet mode; air filter life of up to 5,500 hours in eco mode; wide-angle 1.2x zoom lens; operation noise of only 29 decibels (in quiet mode); multiple inputs; and RJ-45 and RS-232C connections for full LAN control and remote PC control. MSRP: $799. *usa.canon.com*, booth 3628

Multimedia Management

The **Epson** *PowerLite Pilot Connection and Control Box* provides centralized multimedia management for the company's wall-mounted short-throw and ultra-short-throw projectors. The device can connect and manage audio and video sources such as computers, DVD players, iPods, and more, simplifying projector operation and cable management. The control box is designed to mount on a wall next to the projected image, allowing instructors to change sources or adjust volume with the press of a button—eliminating the need for a projector remote control. Optional accessories include a set of two speakers with built-in amplifier, and a wireless pendant microphone. Estimated street price: $249. *epson.com*, booth 1942

NEW! Digital Signage With Dynamic Wayfinding

Omnivex's *Moxie 6.08*, the latest version of the company's digital signage software, includes dynamic wayfinding with dynamic path rendering and flexible metadata that allows any content to be displayed when an interest point is selected. Other improvements include unlimited levels of undo and redo; enhanced playlist capabilities; usability changes to make everyday activities quicker and easier; integrated remote deployment; Windows log on integration; encryption control; and communications optimization for faster updates using less bandwidth. Contact vendor for pricing. *omnivex.com*, booth 4549

NEW! Portable Live-Streaming Appliance

Digital Rapids is showcasing the new 2.0 version of its *TouchStream* portable encoding and live-streaming appliance. New support for Digital Rapids' *Broadcast Manager* multi-encoder management software enables comprehensive management and control of multiple *TouchStream* units remotely, from a centralized location. Features

include scheduling, "failover" (automatic switching to a backup encoder) for fault tolerance, and a "control room" view with mosaic-style, multichannel confidence monitoring (to allow users to check that material is being recorded correctly). *Touch-Stream 2.0* also includes adaptive streaming for Apple iPhone/iPad and expanded Microsoft IIS Smooth Streaming capabilities for Silverlight-powered content. Pricing ranges from $3,995 (standard definition, analog video input) to $10,000 (high definition). *digital-rapids.com*, booth 2378

Rack-Mounted Equipment Storage

Da-Lite Screen Company's *Dual 14 Space Equipment Rack Cart* features two 14-rack cabinets to accommodate storage of rack-mounted equipment while maintaining a standard furniture height of 32 inches. Locking smoked acrylic front doors enable easy transmission of infrared signals, and a removable rear-access panel facilitates equipment installation and maintenance. Other features include two six-outlet electrical strips, dual cooling fans, top and bottom grommet holes for easy cable pass-through, and six 3-inch casters. The cart is available in seven hand-rubbed veneer finishes, four laminate finishes, or any custom finish. MSRP: $2,008 with standard veneer finish; $1,872 with laminate finish. *da-lite.com*, booth 2501

High-Brightness Projector

NEW! The *SH960* DLP projector from **BenQ** features 1080p native resolution, Brilliant-Color technology, and a brightness of 5,500 ANSI lumens, allowing the device to project brilliant images even in ambient light. The *SH960* is equipped with a 3,000:1 contrast ratio and native 16:9 aspect ratio with a 1.07 billion-color palette. Its dual-lamp design allows users to opt for maximum brightness or an eco mode that extends lamp life

by 50 percent. Horizontal and vertical lens shift technology gives users flexibility in projector placement, allowing the focal point of the lens to be adjusted in venues where dead-center placement isn't possible. And the company's proprietary Wall Color Correction feature allows users to adjust the projector's output for natural-looking color even on tinted walls. MSRP: $6,999. *benq.us*, booth 943

Extreme Short-Throw Projection

Mitsubishi's *EST* (extreme short-throw) line of ultra-short-throw DLP projectors uses a specially crafted lens (rather than mirrors) that can project a 70-inch image from less than 23 inches away. The widescreen format *WD380U-EST* and XGA-resolution *XD380U-EST* boast 2,800 and 2,500 lumens of brightness respectively, 3,000:1 contrast ratio, 6,000-hour lamp life (in low mode), and a noise level of 28 decibels. The models weigh just 9 pounds, making them easy to carry or place on an A/V cart. A built-in 10-watt speaker with variable audio output eliminates the need for external amplifiers and speakers. MSRP: $1,299 for the *WD380U-EST*; $1,199 for the *XD380U-EST*. *mitsubishi-presentations.com*, booth 3400 **CT**

When & Where

June 11-17, 2011
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infocommshow.org

July 25 – 28, 2011
Seaport World Trade Center
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EXPLORE TARGETED TRACKS AND WORKSHOPS

Then go to campustechnology.com/agenda for the complete schedule.

Monday Workshops:Close-Up and Hands-On
Workshop Titles Include:

>> 21st Century Education in the Cloud

>> Buzzwords Come to Life: The Latest Web 2.0 Tools for the College Classroom

>> iPads Applications and Uses in Education

>> User-Centered Learning Space Design

>> M-Learning on Speed Dial: How to Develop a Nimble Academic Mobile Learning Strategy for Your Campus

Track Topics for Tuesday –Thursday Sessions

>> Digital Campus and IT Infrastructure

>> Instructional Design and Learning Environments

>> Leadership, Innovation and Strategy

>> Learning Applications and Tools

Exhibit Hall and Marketplace
The Campus Technology exhibit hall and marketplace lets you preview the software and services that interest you the most. Leading higher-ed tech companies will be displaying and demonstrating products throughout the conference. Meet face-to-face with company representatives, or preview and purchase the latest hardware, software and peripherals.

ATTENDEES SAY…

"I enjoyed the breakout sessions; I thought the presenters were all excellent. The keynote speakers were also very effective."

"Tremendous exchange of information and ideas."

"Very focused on solving problems and being innovative but with real life solutions and examples… CT also always offers great networking opportunities where I do meet others who align with my areas well."

Source: Campus Technology 2010 Attendee Survey

View complete session details at campustechnology.com/agenda

OUTSTANDING OPENING KEYNOTE

OPENING KEYNOTE
TUESDAY, JULY 26, 8:30 – 9:45 AM
From Knowledgeable to Knowledge-able: New Learning Environments for New Media Environments

Michael Wesch
Cultural Anthropologist, Researcher in Digital Ethnography and Associate Professor, Kansas State University

It took tens of thousands of years for writing to emerge after humans spoke their first words, thousands more before the printing press and a few hundred again before the telegraph appeared. Today a new medium of communication emerges every time someone creates a new Web application. Michael Wesch will demonstrate the profound yet often unnoticed ways in which our culture is being remixed by new media. He will explain why we need to move from being simply knowledgeable to being knowledge-able and propose ways we can organize our education systems to foster the forms of learning we need.

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Tuesday, July 26, 10:15 – 11:45 am (TSE)
Alfred Spector
Vice President of Research and Special Initiatives for Google

Wednesday, July 27, 10:15 – 11:45 am (WSE)
Cameron Evans
National and Chief Technology Officer for Microsoft

Thursday, July 28, 9:00 – 10:30 am (THSE2)
Bob Trikakis
Apple Education Development Executive

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MONDAY, JULY 25

Time	Code	Session
8:30 AM – 11:30 AM	M01	21st Century Education in the Cloud
	M02	Principles and Practices for Online Courses that Engage Learners
	M03	Buzzwords Come to Life: The Latest Web 2.0 Tools for the College Classroom
	M04	iPads: Applications and Uses in Education
	M05	User-Centered Learning Space Design
	M06	Online Research Tools for Educators: Collaborate without Jet Lag!
1:30 PM – 4:30 PM	M07	M-Learning on Speed Dial: How to Develop a Nimble Academic Mobile Learning Strategy for Your Campus
	M08	Buzzwords Come to Life: The Latest Web 2.0 Tools for the College Classroom
	M09	iPads: Applications and Uses in Education
	M10	Skype and Google Docs: A Perfect Alliance to Support Communities of Inquiry

TUESDAY, JULY 26

Time	Code	Session
8:30 AM – 9:45 AM		**Opening Keynote: From Knowledgeable to Knowledge-Able: New Learning Environments for New Media Environments:** Michael Wesch, Cultural Anthropologist, Researcher in Digital Ethnography, and Associate Professor, Kansas State University
10:00 AM – 11:00 AM	T01	Digital Media Campuses: The Transition from Word Processing to Digital Media
	T02	Pod Rooms: Faculty Friendly Classroom Technology
	T03	Navigating the Elusive World of Virtual Collaboration in the Classroom
	T04	ePortfolios Integrating People Life and Learning
	T05	The Four Pillars for Technology Decision Making
	T06	IT as a Service: Leveraging Private, Public, and Hybrid Clouds
10:15 AM – 11:45 AM	TSE	A Conversation with the Future: Google
11:15 AM – 12:15 PM	T07	Community of Practice in Online Education—Collaborative Curriculum
	T09	The 21st-Century Campus: Students Tell It Like it Is
	T10	Keeping Administration and Faculty Informed: Reports and Dashboards
	T11	Academic Video Management: Done the Open Way with OpenCast Matterhorn
3:45 PM – 4:45 PM	T12	Academic Progress Portal: Catching Students Before They Fail
	T13	Walking Ulysses: Collaborative and Mobile Mapping in the Humanities
	T14	We All Have iPads...Now What?
	T15	Leading Change: Course Redesign

WEDNESDAY, JULY 27

Time	Code	Session
8:45 AM – 9:45 AM		**General Session Keynote and Innovators Awards: Making It Real: The Adoption of Innovation:** Ellen D. Wagner, Executive Director, WCET
10:00 AM – 11:00 AM	W16	CHANGE Migrating from Legacy LMS to an Open-Source Moodle Platform
	W17	Engaging Faculty: Observations from ACU's Mobile Learning Initiative
	W18	Teaching and Learning with Low Cost and Low Barrier Technologies
	W19	CT 2011 Innovator at Work Award
	W20	Finding Funding: Alternative Revenue Streams
10:15 AM – 11:45 AM	WSE	A Conversation with the Future: Microsoft
11:15 AM – 12:15 AM	W21	One Stream to Rule Them All: Unifying Online Campus Video
	W22	Beyond Web 2.0: How Virtual Learning Environments Should Help Learners
	W24	CT 2011 Innovator at Work Award
	W25	Value of Portfolio and Project Management in Tight Economic Times
3:45 PM – 4:45 PM	W26	Head in the Cloud, Feet on the Ground: Modernizing Computer Lab Support
	W27	eAssessment: Using Electronic Portfolios for Curriculum Improvement
	W28	Using iPads to Produce and Publish Content in an Education Reporting Class
	W29	CT 2011 Innovator at Work Award
	W30	Trust, Verify, and Communicate: Presidential Perspectives on the Campus Investment in Information Technology

THURSDAY, JULY 28

Time	Code	Session
8:30 AM – 9:30 AM	TH31	Learner Analytics via the Cloud: Sophisticated Statistics Made Easy
	TH32	Building a Culture of Assessment Using Rubrics: A Web 2.0 Approach
	TH33	Energing Technologies in Content Delivery: eBooks and eReader Devices
	TH34	CT 2011 Innovator at Work Award
9:00 AM – 10:30 AM	THSE1	FEATURED SESSION: Project Rescue: Lessons on Leadership
	THSE2	A Conversation with Apple Education
9:45 AM – 10:45 AM	TH36	Securing Campus Network Access for an Improved User Experience
	TH37	IT Literacy in the Internet Era
	TH38	Using Popular Social Networking Tools In (and Out of) the Classroom
	TH39	Welcome to Class. Please Take Out Your Cell Phones!
11:00 AM – 12:00 PM		**Closing Keynote: The Fourth Decade of the 'IT Revolution': Continuing Challenges and Opportunities:** Kenneth C. Green, Founder, The Campus Computing Project

Check campustechnology.com/agenda for latest information.

Monday workshops require an additional fee.
Schedule accurate as of 5/11/11.

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Trendspotter

IT's Balancing Act

IT must keep services reliable, even while adopting cutting-edge innovations.
By Mary Grush

Ellen Wagner, executive director of the WICHE Cooperative for Educational Technologies (WCET), will give a keynote, "Making It Real: The Adoption of IT Innovation in Higher Education," at Campus Technology 2011 just prior to the 2011 CT Innovators Awards. As a preview, CT *asked her a few questions.*

CAMPUS TECHNOLOGY: Is there a leading edge of IT innovation that higher education institutions can follow?

WAGNER: The nature of innovation is that it is *always* ahead of the curve, usually by as many as two standard deviations. So, by its very nature, you are not going to see mass adoption of any variety of innovative technology. Enterprise IT folks can't afford to put all their energies on the leading edge of innovation. There's a lot of trial and error for getting innovations to work in your own organization; it can be expensive and really not worthwhile unless the pilots are tested, results measured, and outcomes evaluated. More to the point, enterprise IT cannot exist without stable, reliable, tested infrastructure at its base.

CT: But are there technology innovations that institutions should consider adopting now?

WAGNER: Yes, of course. None of us can afford to wait until we know all the answers about emerging tools and technologies before we put them to work. If you are a potential technology adopter, you owe it to yourself to stay on top of what's happening so you can learn to recognize what, from the panoply of technology innovation in higher education, might be the very shining light your institution needs to keep moving ahead.

CT: What is the role of IT leadership in the adoption of innovation?

WAGNER: IT leaders play an interesting role. On one hand they are supposed to keep the castle secure—and there is a lot of really nasty stuff, such as viruses, malware, and phishing, out there these days. On the other hand, these leaders are expected to respond to emerging trends, even break new ground. And IT professionals are also expected to provide institutions with certain economies of scale, so their organizations can remain operational within today's constrained budgets. They can't afford to go chasing after every single thing that sounds like a great idea. So, if they don't have some way of reviewing emerging new media, they run one of two risks: First, they may find themselves becoming irrelevant; second, if they can't systematically evaluate the value and impact of specific innovations on their institutional operations, they may put their own and their institutions' reputations at risk.

CT: How can IT leaders make a difference?

WAGNER: You know, there has never been a time when IT has mattered more. There has never been a time when having a reliable, secure, safe, and consistent framework for doing work matters more. But we've got to make sure that we balance all that with the need to determine what's coming next. How *do* we plan ahead? We all know how long it takes to

> **"None of us can afford to wait until we know all the answers about emerging tools and technologies before we put them to work."**

change budgets: The Campus Computing Project's data show how approximately 87 percent of institutional IT budgets are spoken for before the next year even comes. We don't have a very big window of opportunity, so IT must help the institution be smart about setting priorities regarding the adoption of technology innovation.

Editor's note: You can hear Ellen Wagner's keynote at Campus Technology's *annual summer conference, held this year in Boston, July 25-28. For more information about Campus Technology 2011, go to* campustechnology.com/summer11.

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