CAMPUS TECHNOLOGY

Empowering the World of Higher Education

THE NEW CIO:

STRATEGIST, CHANGE LEADER, DIGITAL GUIDE p.18

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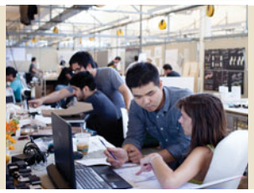

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Analytics at Scale

MOOCs should be the Holy Grail of student data, but they aren't there yet.

ONE OF THE GREAT promises of massive open online courses, besides making education more accessible, is the treasure trove of student data collected on a grand scale.

Large amounts of data are exactly what higher education needs to stay relevant in this era of disruptive change, as Arizona State University's Adrian Sannier pointed out in his keynote at last summer's Campus Technology annual conference. The only way to make sure colleges and universities are continually boosting student success, he said, is evidence-based pedagogy. And that requires scale: "You can't take evidence one class at a time, one person at a time — it takes too long, you don't get a broad enough sample…. I'm not sure you can do it at a university, at a single institution. You may not have enough scale, you may not have enough size."

Rhea Kelly,
Executive Editor

Yet scale can be both a blessing and a curse, as evidenced by the preliminary data analysis from MIT and Harvard's first year of edX MOOCs. The data sets are massive: 841,687 course registrations generating about 340 GB of total data. But the conclusions made by the researchers are not nearly as interesting as the conclusions they *couldn't make*.

One might easily assume that a large set of MOOC data would reveal patterns in student behavior, and suggest some key indicators to predict student success. Turns out the MOOC universe is not so easy to parse, perhaps due to the large percentage of students who treat MOOCs as Web content to surf rather than courses to complete, pointed out Andrew Ho, associate professor at the Harvard Graduate School of Education and a lead researcher for the MITx/HarvardX study. As a result, he said, "Everything predicts MOOC performance, because doing anything in this space separates you from the thousands of people who are doing relatively little — thus doing anything predicts doing anything else." (Read our interview with Ho, "Inside the First-Year Data From MITx and HarvardX," on page 8.)

In fact, Ho said, the study took care to call the MOOC participants "registrants" rather than students, emphasizing that they could not be viewed through a conventional analytic lens from higher education.

That's not to say that predictive behavior patterns don't exist for MOOC students — it's just that, ironically, we don't have enough data to separate out what's meaningful at MOOC scale.

More research is needed, and it's up to higher ed institutions to work together to achieve the scale needed to generate actionable data. As University of Michigan CIO Laura Patterson put it in this month's cover story (page 18), "We have to be more open to collaboration across the industry as we look at the changes driven by research and teaching and learning at scale — learning analytics particularly…. We are in an era in which no single university is going to meet the challenges alone. Universities working together to meet demands of the future will be a critical part of our success." CT

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IN BOX

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Studying the Flip

In our February issue, "How to Make the Most of the Flipped Classroom" explored best practices for teaching in a flipped classroom as well as a recent study on the effectiveness of the flipped model.

I am very glad that NSF is supporting multiple studies on the flipped classroom. This is the way to verify and validate this mode of learning. I am leading another three-year study sponsored by NSF at the **University of South Florida** with partners from the **University of Pittsburgh**, **Alabama A&M University** and **Arizona State University**. We want the data to do the talking, but of course we have to wait three years to gather our conclusions. At the same time, please do not discourage well designed, fully guided instruction, especially when it's coupled with a universal design learning approach.

Autar Kaw

Disturbing Disruptions

*"4 Disruptive Trends Changing the Future of IT" (*CT *February) reported on futurist technologies poised to redefine the way we think about IT.*

So … Orwell meets Huxley. Very unnerving.

JanJo

LTI History

In February's "LTI Standard Promises a Kinder, Gentler LMS," CT *looked at how Learning Tools Interoperability is turning the learning management system into a more seamless, fluid platform.*

The LTI working group was up and running in 2006 with substantial leadership from (at the time) Horizon Wimba, Blackboard, Learning Objects, Pearson and others. It almost all came apart, but with a couple of ad hoc lunch and "drink" meetings at the IMS Global Learning Impact conference in Austin in 2007, the key folks recommitted to developing and supporting the standard. At that meeting, Dr. Chuck started to drive consensus around the vision for both "basic" and "full" LTI.

Ell

I AM VERY GLAD THAT NSF IS SUPPORTING MULTIPLE STUDIES ON THE FLIPPED CLASSROOM. THIS IS THE WAY TO VERIFY AND VALIDATE THIS MODE OF LEARNING.

Focus on the Students

Our January cover story, "Breaking the MOOC Model," assessed the future of massive open online courses in higher ed.

As long as the focus of digital tools is "How do *we teach* in digital networked environments? How do *we teach* when the power balance between a faculty member and a learner is different than it was in the past? How do *we teach* when learning can be tracked and measured and assessed outside the university or formal education?" — then absolutely nothing will change and technology will continue to be a sustaining innovation in a broken system. When the words "we teach" are replaced by the words "students learn," then we'll see digital tools make a real difference.

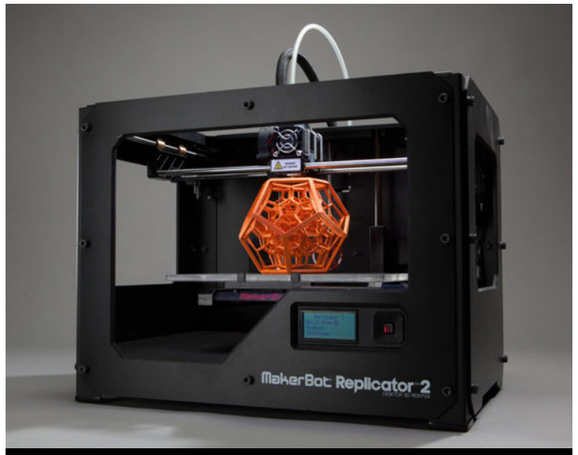
Rob Hall

Letters are edited for length and clarity.

Campus + Industry

TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

3D PRINTING CENTERS. MakerBot, producer of desktop 3D printers, is launching Innovation Centers for universities and businesses in an effort to improve collaboration. Built in partnership with MakerBot's engineering, creative and training teams, the centers are designed to be 3D printing hubs that serve multiple departments in an institution as well as the public. The first center, serving the science, math, engineering and fine arts programs at the **State University of New York, New Paltz**, celebrated its grand opening Feb. 11. *Read the full story online.*



Courtesy of MakerBot

MakerBot's Replicator 2 desktop 3D printer

I.T. SPENDING GROWTH DOWN. Worldwide IT spending growth will slow to 4.6 percent this year (down from the previous forecast of 5 percent), according to a report from IDC. The main culprits named by the market research firm: economic slowdown in emerging markets (with currency devaluation and inflation inhibiting business confidence), plus an inevitable deceleration in the massive growth of smartphones and tablets. *Read the full story online.*

FROM LEGACY TO POSTMODERN. Highly customized enterprise resource planning (ERP) systems will be considered "legacy" by 2016, according to a recent report from Gartner. Gartner defines legacy as "any system that is not sufficiently flexible to meet changing business needs," which includes heavily customized ERP implementations. The company predicts that over the next 10 years, the majority of organizations will gradually transition their legacy ERP systems to "postmodern ERP" systems, which will blend cloud-based solutions, business process outsourcing and on-premise applications. *Read the full story online.*

ONLINE DEGREES. The **University of Florida** has partnered with Pearson to launch UF Online, an online undergraduate degree program for new and transfer students. UF will maintain control over curricula, faculty, admission and enrollment standards, while Pearson will provide technology, recruitment marketing, enrollment management and student support and retention services. UF projects enrollment numbers for UF Online to reach 24,000 within 10 years. *Read the full story online.*

SECURING THE NETWORK. To better monitor network activity and enforce security controls, **Rollins College** (FL) has rolled out the CounterACT network access control system from ForeScout Technologies. With the system's dashboard, IT staff can view and manage network activity, in real time from a single screen. Staff members can see who's accessing the network, the devic-

CTONLINE

Breaking News

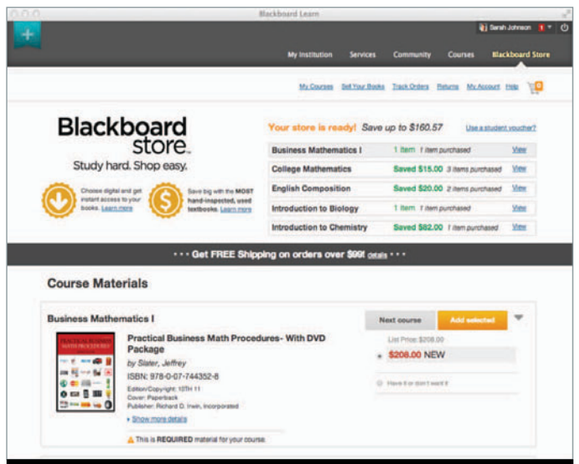
- U Wisconsin System Launches Commercialization Seed Fund 02/20/14
- UMD Breach Exposes 309,000 Records 02/20/14
- George Brown College Adds 3D Projectors to BIM Lab 02/20/14
- Researchers at MIT, U of Connecticut Develop Faster, More Efficient Data Caching Designs 02/20/14
- Kaplan Online Students To Hit Online Bookshelf for Texts 02/19/14
- European MOOC Platform Nearing 500,000 Enrollments 02/19/14
- Carnegie Mellon U Taps Private Partner for Machine Learning Research 02/19/14
- UCLA Launches Crowdfunding Platform for Faculty, Student Organization Projects 02/19/14
- Brief: MatterHackers To Launch Software for Stand-

Click here for breaking news

- Brief: WillowTree Launches App, Site Crea… Platform 02/18/14
- Cornell To Offer Journal Articles Through E… Markets Research Portal 02/18/14
- Marist Launches The FOLD Online Learning Community with Style at New York's Fashion Week 02/14/14
- Android Smart Phones To Approach 1 Billion in 2014 02/14/14
- NSF Funds Next-Gen Network Research 02/14/14
- Drupal-Based Opigno LMS Released in Hosted Version 02/13/14
- Nova Southeastern U Building $80 Million Center for Collaborative Research 02/13/14
- Brigham Young Student Game Woos Kids to Reading 02/13/14
- Pearson Launches Acclaim Open Badge Platform 02/13/14
- College of Idaho Upgrades Storage for Virtualized Environment 02/13/14
- BYOD Pressures Oral Roberts U to 10-Fold Network Capacity Upgrade 02/13/14

es they're using and what applications and processes they're running. They can also take a closer look at a specific user's system if they notice unusual activity. *Read the full story online.*

BLACKBOARD BOOKSTORE. This summer, Blackboard plans to introduce a virtual bookstore accessible directly within the learning management system. The e-commerce system, still under development, will allow students to purchase course materials assigned by the instructor — new, used and rental textbooks, e-textbooks, digital content and more — pre-populated in a personalized shopping cart. Faculty will be able to search the store for instructional content, and assign both commercial and open materials for a particular course. *Read the full story online.*



A concept image of what the Blackboard bookstore might look like

INTERNET2 FOR SMALL SCHOOLS. Internet2 is broadening its support to include smaller colleges and universities that are not necessarily research institutions but that nevertheless have cyberinfrastructure needs. The project, funded by a $1.3 million grant from the National Science Foundation, will consist of three major workshops and up to 30 campus consulting visits over the next two years. *Read the full story online.*

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How process improvement and project management tools helped WKU overcome silos and inefficiencies and improve client satisfaction.

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How Small Colleges Drive and Manage Rapid Growth

Valley College (WV) boosted enrollment by 100 percent in one year — without compromising student service and with a minimal increase in staff — thanks to its student information system.

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Where Is the Cloud Taking Data Centers?

Two higher education experts detail how campuses can leverage cloud-based storage solutions to corral costs and better manage the data tsunami.

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Upcoming Events

March 30-April 2

The Association for Information Communications Technology Professionals in Higher Education

2014 ACUTA Annual Conference

Dallas

April 5-8

American Association of Community Colleges

AACC 94th Annual Convention

Washington, DC

April 5-14

The SANS Institute

SANS 2014

Orlando, FL

April 8-9

Campus Technology Forum

Long Beach, CA

April 13-16

National Association of Campus Card Users

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PRODUCT ROUNDUP

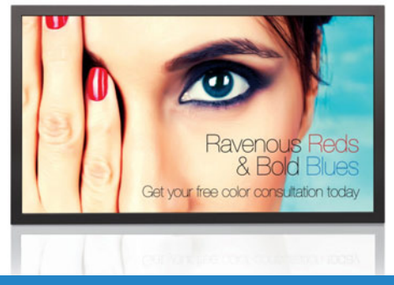
Editor Picks

The latest releases, services and new product versions

PhatPad 3.0 for iPad features a full-screen file manager for previewing, exporting, duplicating and e-mailing documents. *Read the full story online.*

Epson's WorkForce DS-560 wireless sheetfed scanner provides point-to-point scanning directly to smartphones, tablets, PCs or Macs. *Read the full story online.*

The **Stratasys Objet500 Connex3** 3D printer is able to print in multiple colors and materials in a single run. *Read the full story online.*



The 65-inch **Christie FHD651-T** touch-enabled HD flat-panel display can handle up to four simultaneous touches. *Read the full story online.*

The **CP-AX2503** is one of four new ultra-short-throw 3LCD projectors from Hitachi designed for delivering large images in limited spaces. *Read the full story online.*

The **Crestron RMC3** is the company's smallest AV and environmental systems room controller to date. *Read the full story online.*

newreleases

Live News from CT Online

AV & Presentation

- New Digital Signage Gear Takes Center Stage at Expo
- wePresent Ships 64-User Wireless Classroom Presentation Systems
- Hitachi Intros Four New Ultra-Short-Throw Projectors

Business & Administration

- EFI Announces New Cloud Printing and Management Features
- HP Unveils Android-Based PC and All-in-One Desktops
- Epson Wireless Scanner Scans Direct to Mobile Devices

Enterprise Systems

- Yammer Enterprise Coming to Microsoft Office 365 Education Plans
- Red Hat CloudForms Adds Supports for Red Hat Enterprise Linux OpenStack Platform
- rSmart Releases Automated Grant Management for Kuali Coeus

Infrastructure & Facilities

Click here for new releases

- Intel Intros HPC Distribution for Apache Hadoop for Storing [illegible]sing Big Data

Mobile Computing

- New Ruckus SPoT Brings Location-Aware Services Indoors
- Cloudpath Networks Intros Automated Device Enablement Framework
- Aerohive Announces Mobility Suite for Managing Mobile Devices

Retention, Recruitment & Marketing

- Deltak Intros Engage Student Relationship Platform
- Modo Labs Releases Tour 2.0
- Jenzabar Revs Social Media Platform for Higher Ed

Security

- Bradford Networks Revs Network Sentry with Microsoft Hyper-V Server and MaaS360 Support
- Bradford Networks Launches Cloud-Based NAC Service for Schools
- Cooper Roam Secure Alert Network Connects to FEMA Alert Systems

Inside the First-Year Data From MITx and HarvardX

Harvard researcher Andrew Ho on what we can learn from the first batch of edX MOOC data.

IN JANUARY, **MIT** and **Harvard University** (MA) released a series of working papers based on data from massive open online courses offered on the edX platform from 2012-2013. The goal of the study was "to research how students learn and how technologies can facilitate effective teaching both on-campus and online."

The data sets were considerable: On average, 20 GB of data were analyzed per course. Among the key findings:

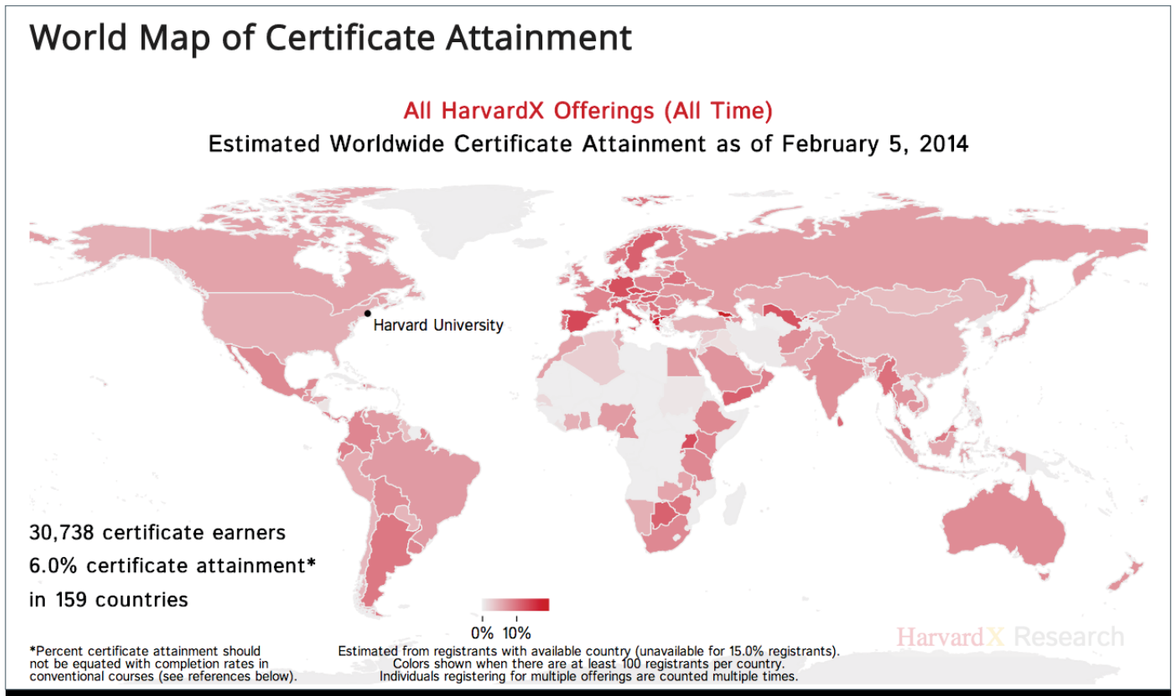
- Course completion rates are not necessarily an indicator of a MOOC's impact on students. Even when large numbers of registrants failed to complete a course, they still accessed substantial amounts of course content.
- While 50 percent of MOOC registrants dropped off within a week or two of enrolling, attrition rates decreased substantially after that window.
- The most typical MOOC registrant was male, 26 or older, with a bachelor's degree — yet that demographic represented fewer than one in three students.
- There are considerable variations in average demographics across courses, in terms of gender, college degree attainment, median age and percentage from the U.S.

CT asked Andrew Ho, associate professor at the Harvard Graduate School of Education and a lead researcher on the project, for his take on the study findings and MOOCs in general.

CT: Did any of your findings surprise you?

Ho: There is a reason that we at HarvardX and MITx released 16 reports on a single day and not just one: Each of our courses is different, with different content, different registrants, different learning goals and different philosophies about what a "MOOC" is and should be. It's easy to make the mistake of believing that MOOCs are a monolithic entity, all with common structure, common students and common goals. The data, both quantitative and qualitative, surprised me with their variability across students and courses.

Our results show considerable differences on all demo-



Researchers created several visulizations from the HarvardX data, like this one on certificate attainment (available at the HarvardX Web site).

Courtesy of HarvardX

graphic variables, from gender to age to prior educational attainment. Science, technology, engineering and mathematics courses had larger proportions of male students and had younger age distributions on average. Our courses in the School of Public Health had older students who were particularly well educated and international. And we show that every course has substantial representation from young students, old students, educated students, uneducated students, international students and students from countries with low average socioeconomic status.

CT: What are some of the challenges in interpreting the data?

Ho: The first challenge is remembering that these courses are open and online. To some registrants, they are not courses as much as Web content to surf. We purposefully called students "registrants" in our reports, and we were careful not to assume that a registrant is anything like a conventional student in a college or graduate school. We tried to let the data tell their story rather than impose a conventional analytic lens from higher education.

The second challenge is asynchronicity. Some registrants enroll months before a course launches and others months after it technically closes. The certification rates for some of the courses in our reports are dropping, simply because registrants are still enrolling now, well after the certification window has closed. They become "dropouts" the second they enroll, and then they stick around and learn. There is no conventional analog to these students in higher education, and calling them "dropouts" does not adequately tell their story or the story of MOOCs.

CT: How do you define student success in a MOOC?

Ho: In our reports, we are careful to describe what registrants did, not eval-

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uate whether they were "successful." Did certified students learn anything, or were they already experts and simply desired certification? If a student is interested in one module of a course, takes it and never completes the rest, is that student successful? If registrants with advanced degrees in physics breeze through a physics MOOC for material to teach their own courses, are they successful? If a bored Web surfer registers for a class and watches a single video about the meaning of justice, never to return, is that a failure? Without the cost structure, accountability structure and expectations of conventional college classrooms, answering these questions is difficult.

This will be unsatisfying to people who want to answer the question, "Do MOOCs work?" Our research demonstrates that we have to get specific: "Work for what?" The presumed downstream use of MOOCs is to enhance, replace and disrupt existing models of higher education. The data that we analyze are not from this downstream use case, but one where the near-term goal was open access and experimentation. To be clear, I think we need to define student success in a MOOC, and we present some metrics that show promise in our reports. Stay tuned for Year 2.

CT: Did you find any indicators that might predict student performance?

Ho: Yes, but we downplayed them in the report, and for good reason. In a related paper with MIT coauthors, we show correlations with performance and also discuss why they are misleading. In MOOCs, student performance is confounded with student interest far more than in conventional classrooms, where student level of interest is relatively homogeneous.

What if I told you that usage of discussion forums predicts student grades? That might make a good headline: Online discussion increas-

es MOOC performance! But the headline is misleading. Everything predicts MOOC performance, because doing anything in this space separates you from the thousands of people who are doing relatively little — thus doing anything predicts doing anything else. Nonetheless, our Year 1 findings have helped us to motivate and design our Year 2 research, currently under way, where we have a number of randomized experiments in place that will allow us to estimate causal impacts on performance and persistence. We can't wait to present these results.

CT: What kind of further research is needed?

Ho: We need more reports like this from other institutions and from other MOOC providers. And we need better data. As we mention in our report, we do not have sufficient data about registrant demographics and intentions to tell whether students, instructors and institutions are achieving their goals. HarvardX now has a common survey instrument across its courses, and we will rely on that heavily when we report our Year 2 results. Finally, although there has been excellent informal experimentation in the MOOC space, we need more rigorous, systematic, controlled experiments to understand how we can increase the likelihood of achievement and persistence through open online courses.

CT: Where would you place MOOCs on the hype cycle?

Ho: I think one-third has inflated expectations and two-thirds are in the trough of disillusionment. If anything can get us responsibly to the plateau of productivity, it's good data and good research. This is just the beginning. We look forward to Year 2. CT

go back to TOC

NEXT: Southern New Hampshire U's Online Success

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The Secret of Southern New Hampshire University's Success

SNHU went from a small, relatively unremarkable New England institution to one of the biggest nonprofit online educators in the country.

ON THE COMPETITIVE playground of higher education business, where institutions vie for students and tuition dollars and survival, Paul LeBlanc is the sort who will take your lunch money and eat your lunch.

LeBlanc comes across as a nice guy in an interview, but he is a disruptive force. In just a few years, the president of **Southern New Hampshire University** has transformed a relatively unremarkable New England institution into the fastest growing not-for-profit online educator in the country — and one of the biggest. SNHU's College of Online and Continuing Education enrolls 25,000 students in 36 states, generates annual revenues of $200 million and has double-digit profit margins.

SNHU has succeeded in the online space by leveraging technology and providing well-constructed courses and Amazon-like customer service to mostly older students at a cost they can afford. Tuition and fees for SNHU's online BA are about one-third of what students pay to earn the same degree at the university's leafy brick-and-mortar campus, not including housing and meals. The main campus and its virtual counterpart have a symbiotic relationship. The former provides credibility to the online operation. The latter distributes profits to its alma mater in the form of royalty payments.

LeBlanc is at the crest of a gathering IT-enabled wave of disruptive innovation that will put half of all universities out of business in 15 years, predicted Clayton Christensen, a **Harvard Business School** professor, author of *The Innovative University* and a friend of LeBlanc. Christensen's work provided the principles and philosophical underpinnings that LeBlanc has exploited to create a new business model for delivering education at SNHU. A true believer, LeBlanc continues to innovate. What's next? Creating a new model that will blow up the current one, of course.

"Paul is one of the few people who took our research on innovation and how to survive disruption seriously," said Michael Horn, cofounder and executive

SNHU has succeeded online by combining high-quality courses with Amazon-like customer service.

director of the Clayton Christensen Institute for Disruptive Innovation. "They are developing a recipe book for how you manage innovation at an established [university]."

Reinvention by Necessity

When Leblanc arrived at SNHU in 2003, the institution was in no shape to throw its weight around. It was a second- and perhaps a third-tier institution. Founded 70 years earlier as a proprietary storefront secretarial school in Manchester, the university had evolved into a middling traditional institution of a few thousand students. Six years into LeBlanc's administration, amid the Great Recession, enrollment was down and budget pressures were becoming increasingly uncomfortable. Forced into action, LeBlanc and SNHU's board made a decision to build up the university's anemic online presence, which had existed since 1996, and aggressively enter the market for non-traditional students.

"When you have opportunity and urgency, that's a powerful combination," LeBlanc said.

The growth of the last four years has been remarkable. In 2012, *Fast Company* named SNHU to its list of the World's 50 Most Innovative Companies, recognizing it "for relentlessly reinventing higher education online and off." The university was number 12 on the list, ahead of LinkedIn. Higher education leaders hopeful of establishing an online beachhead have sought the advice of LeBlanc. Eduventures predicts that in the next 12 to 24 months, as many as 500 institutions of higher education will enter the online education space or attempt to expand existing programs.

SNHU's success has been due, in part, to good timing. In the decade or so before the economy crashed, the for-profit education sector had proven that there is a viable market for online education. More recently, the buzz about massive open online courses (MOOCs)

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created by elite institutions such as **Stanford** (CA), **MIT** and **Harvard** (MA) further legitimatized online education.

When the recession hit, the combination of high unemployment and high tuition created a new market: millions of older workers searching for a low-cost means of acquiring new credentials and marketable skills. Yet pioneering for-profit institutions were back on their heels amid withering government scrutiny of their business practices.

SNHU saw an opportunity and seized it.

"The market was ready for a high-quality, nonprofit alternative," LeBlanc said.

SNHU's online success wasn't all fortuitous timing and dumb luck. LeBlanc and his team were smart about their virtual adventure. The president raided the for-profit sector to assemble a crack team of online education professionals. He gave the online operation autonomy, allowing it to take chances that the university's bureaucracy otherwise wouldn't have allowed. And he used troves of electronically collected data to analyze progress and make course adjustments.

"We studied the way for-profits use data to drive decision-making, streamline administrative processes, focus on customer service and more," LeBlanc said. "We also invested heavily into academic quality, superb advising and student support."

The result is a new hybrid university "that combines the best values of the nonprofit sector with the operational prowess of the for-profits," LeBlanc said. An unexpected plus is the way SNHU's online education has benefited traditional modes of instruction. Lessons learned about teaching and student engagement online inform operations on SNHU's main campus.

"Ten years ago we used to ask, 'How can we make an online course as good as a traditional face-to-face course?' That question is now reversed." *— Paul LeBlanc, Southern New Hampshire University*

"When faculty teach online, they often bring back to their face-to-face courses new pedagogy, resources and thinking. Advising on the main campus was reorganized in ways inspired by online," LeBlanc said. "Ten years ago we used to ask, 'How can we make an online course as good as a traditional face-to-face course?' That question is now reversed."

Beyond Seat Time

In April 2012, SNHU became the first institution eligible for federal financial aid using a competency-based approach to grant associate degrees. With the Education Department's blessing, SNHU went live with a new education delivery platform, College for America, that combines online learning and competency-based assessments. Students earn credentials on the merit of what they know, not seat time or earned credits.

The amount of quality data captured by online courses makes them stronger candidates for competency-based assessment than traditional classroom learning, noted Sue Talley, dean of education at **Capella University** (online). "You come to the realization that seat time and credits are not a great way of measuring the success of students in a course," she said.

LeBlanc goes further, suggesting that "competency-based education could be the paradigm shift for higher education, much more than MOOCs, though MOOCs have been a subject of media adoration." (For more on SNHU's College for America program, see "Blazing the Trail: Competency-Based Education at SNHU.")

LeBlanc intends to stay ahead of the disruption curve. He indicated that innovation proceeds apace at SNHU, coyly suggesting that there is some "really cool stuff" in the development pipeline that he is keeping under wraps for now.

"We don't want to give that away too soon," he said. **CT**

John Pulley *is a freelance writer based in Washington, DC.*

go back to TOC

NEXT: Know — and Retain — Your Student

Know — and Retain — Your Student

Savvy institutions are using recruitment and other data to support students from first contact through to graduation.

TRACKING EATING and exercise habits, delivering targeted support ads and even conducting warm bed checks are just some of the techniques colleges and universities are adding to their increasingly complex student retention repertoire. That's because, in today's higher education climate, where students commonly apply to upward of 12 schools, and schools must demonstrate their ability to graduate employable students capable of paying back student loans, a school's future may well rest on its ability to learn about and retain its student body.

Constituent relationship management (CRM) tools go a long way for more organized, more timely and more personalized student recruitment. But the data shouldn't stop there: Savvy institutions are gathering information at all stages of student enrollment, finding out about student interests, concerns, habits and activities. And with a combination of CRM and business intelligence applications, they're using that data to support students beyond recruitment through to graduation.

CT spoke with three institutions using data to improve both recruitment and retention on campus.

Better Recruiting

By now it's old news that CRM systems from companies like Ellucian, Hobsons and Jenzabar have streamlined processes for student recruitment. But the recruitment process isn't just more efficient with these tools; it's also more effective.

CRM systems enable recruiters to interact more often and more personally with recruits, and this way they identify the students who are a better fit for their particular institution. And a better fit from the outset equals a higher likelihood of retention.

Grove City College (PA) has been using Jenzabar Recruitment (JRM) to manage its recruitment process since September 2012. "We wanted to ensure that we were using our resources to identify those students who were most likely to come to Grove City," said Alan Roberts, director of enterprise services. "That's a benefit to everyone. We're not wasting our time or the student's time by contacting them about a school they're not really interested in."

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One way Grove City determines student interest is by tracking whether a student has responded to communications from the school. Sarah Gibbs, director of admissions, pointed out that JRM also enables Grove City to respond immediately to student queries to their database,

and connect students with a dedicated admissions counselor who can answer questions and provide guidance.

Increased "touches" give admissions counselors a chance to get to know students better and more quickly than ever before. "The staff knows the school well," Gibbs said. "As they're engaging more with the student, they're getting to know the student and they're able to see whether or not that student is a good fit for the school and whether the school is a good fit for the student."

It's important for the fit to go both ways, agreed Emily Sinsabaugh, vice president for university relations at **St. Bonaventure University** (NY). "We know what students are likely to fit extremely well. The student's perception of fit is also important. We can see a student and think we're a great fit for them, and then the student says, but I need to go to a bigger school."

Through the data it gathers on recruits using Ellucian Recruiter, St. Bonaventure develops a picture of a student's preferences around such factors as academic major, school size, distance from home, religion — St. Bonaventure is Catholic but describes its approach as highly ecumenical — and urban versus rural or suburban environment. Factors like these, many of which have resulted from analyzing retention data, are used alongside a student's academic record, SAT scores, extracurricular activities and stated financial need to help the school determine if the student is a good fit for the institution.

This level of detail enables St. Bonaventure to communicate with prospective students in highly personal and precise ways. For example, if a prospect indicates a strong faith in a religion other than Catholicism, a student representative of that faith will be asked to call that prospective student to discuss what it has been like for them at St. Bonaventure. "We want a student to tell the prospective student about it, because that's a very effective way to communicate," Sinsabaugh said.

St. Bonaventure has seen a 1 percent increase in retention each year since implementing the new recruitment tools and strategies. Feedback from the Office of Student Affairs and Retention corroborates this improvement. "They're telling me, 'These are great classes. These kids are really excited about being here and are relating well to the environment,'" Sinsabaugh said.

Active Support

Once the admissions process is complete, recruiters find

they're sitting on a wealth of useful information about incoming students. Sharing this information with student affairs departments, faculty and administrators keeps the chain of communication intact and alerts those departments to a student's potential risk factors. Armed in advance, schools are starting to address students' support needs actively, rather than waiting and responding to a crisis.

Sometimes this means alerting the appropriate department when there are risk factors in a student's files. Based on retention feedback, Grove City began to ask students during recruiting interviews to describe an experience where they felt the situation was hopeless and how they persevered through the problem. If a student doesn't have an example, this is "a huge red flag," Gibbs said. "We let Student Life and Learning know ahead of time, so they are able to kind of monitor those students and make sure they're okay."

Valdosta State University in Georgia has taken the active approach a step further, by giving faculty access to data on students' risk factors. Brian Haugabrook, interim CIO, connected several different systems to make the data user friendly and accessible.

According to Andy Clark, VP for enrollment management, "On the first day when faculty members see their class, they can see a picture of the students in the class. They can also see if they have any risk indicators, if it's a math or reading class." The system, Oracle Business Intelligence Enterprise Edition with Endeca as the user interface for data analysis, also connects to Degree Works, so faculty can see where students stand in regard to their degree program.

Using Endeca, Valdosta State has also uncovered previously unidentified and unsupported at-risk students. Haugabrook reported that Valdosta's director of advising dragged and dropped different combinations of factors in Endeca and, in the process, identified a population of minority females who had an almost 50 percent chance of failing. "With this information, we can create a program that is tailored to help them succeed," he said. The school has also developed a summer bridge program that helps targeted students in classes they're most likely to struggle with.

At St. Bonaventure, a freshman foundations program supports students who were accepted to the school based on their perceived, but as yet unfulfilled, academic potential. Sinsabaugh said that the more detailed, more personal profiles the school develops for students during recruitment makes it more confident about admitting students who are academically promising but don't have the record to prove it.

Early Intervention

Student behavior on campus is another rich source of data that can be used to help students succeed. If a student begins to miss class, for example, the appropriate department is alerted, and someone contacts the student to find out what's wrong. At Valdosta, a "warm bed check" by student housing found two students with flu in the first month the retention tools were in use. Not only did this enable the school to get the students checked out by student health services, but the information was captured in the students' files, alerting their teachers that their absences were legit.

When students behave in ways that have been identified as risky, Valdosta uses its Web portal to push important resources to the students. For example, Haugabrook noted that students who use the printers in the library have almost 20 points higher chance of staying on track than those who don't. Similarly, using the rec center or eating breakfast are also success indicators. When students fail to do these things, they get targeted "ads" or learning packets for those resources on the school portal.

"We track every click. If they click on an ad, we don't keep giving them the ad," Haugabrook said.

Increased data access combined with timely notification appears to be working. "We're seeing a spike at the tutoring center starting in the second week of class rather than after the second month," Haugabrook said. "They're starting early, before it's too late." CT

__Michelle Fredette__ is a freelance writer based in Portland, OR.

go back to TOC
NEXT: The New CIO

THE NEW CIO: STRATEGIST, CHANGE LEADER, DIGITAL GUIDE

5 higher ed chief information officers discuss their changing role on campus.

By David Raths

IF ONE THING IS CONSTANT in the world of the higher education chief information officer, it's change. Once seen as the plumber keeping networks and systems running, the CIO has morphed into a strategist, helping his or her institution keep up with technologies that are fundamentally changing the business of teaching and learning.

"The best CIOs are emerging as digital guides that universities are turning to for key leadership to drive that transformation," noted Gartner research analyst Terri-Lynn Thayer. "They have a different skill set as brokers, facilitators and change leaders."

Campus Technology interviewed five CIOs about the perceptions of their changing role on campus, asking them to give examples of how they delegate, mentor, collaborate and strategize more than they used to. Here is what they told us: ▸

Image courtesy of University of Michigan

Laura Patterson, University of Michigan

*At the **University of Michigan**, Laura Patterson has been CIO and associate vice president for information and technology services since 2009. She joined the institution in 1993 as the university registrar.*

CT: Have you noticed a significant change in the university's expectations of you as CIO?

Patterson: There is definitely a shift in the role of the CIO from someone who manages technology to someone who manages change. The technology underlies everything the organization does, but it goes beyond that. If you look at what is happening in other industries, such as the newspaper industry, movie distribution, music — that kind of disruption is also occurring in higher education. And the CIO is at the core of that, because it is technology-driven change. It involves massive cultural change in the way we think about what we do and how we do it.

CT: You came to the CIO role from the registrar's position at Michigan after working on enterprise resource planning (ERP) implementations. Has that career path shaped your vision of the CIO?

Patterson: Yes, it has. We did three ERP implementations in five years across three campuses and in our hospital. We had multiple student information systems, multiple financial systems and general ledger systems. It was a huge cultural change moving from all these decentralized, distributed systems into a single core system and thinking about the university's data as infrastructure for decision-making and planning.

Now we are moving to the next paradigm of technology driving change, which is cloud and consumer-driven. As far as the CIO choosing the technology you use — that role is gone. That is why I see the CIO as the person at the table who leads the organization in strategic change.

CT: Is part of the trend getting more directly involved in teaching and learning technology?

Patterson: For the past eight to 10 years, there was a big focus on leveraging technology to drive down costs of administration. That was the premise behind ERP and business intelligence — better decision-making and better planning. Now the paradigm for how research is conducted is changing because of capabilities that technology has introduced, and the teaching and learning pedagogies are changing because of the technology. So the true mission of the university [teaching, learning and research] is now the focus.

CT: You've undertaken a multiyear effort to create the next-generation IT environment at Michigan. What has that involved?

"As far as the CIO choosing the technology you use — that role is gone. That is why I see the CIO as the person at the table who leads the organization in strategic change." *— Laura Patterson*

Patterson: A few years ago, we saw that we were spending significantly above the benchmark for research universities, and a significant portion of that spending was going to redundant and commodity services and infrastructure support. Every department on campus was basically running its own infrastructure. We realized the direction that these technology-driven changes were headed could not be supported in that model. So we launched NextGen Michigan,

to create services running on a unified infrastructure that was also flexible enough to support local innovation. The goal was to drive down costs to free up the resources in the departments so that they were working with faculty on edge technologies and new innovation. Then as edge technologies in a department begin to take hold, we could more rapidly scale them across the university.

CT: You have created an IT Council to set campuswide IT priorities. Why is it so important to focus on outreach, collaboration and community?

Patterson: The IT Council has been absolutely critical to the success of NextGen Michigan and the type of cultural change we are trying to achieve. There are 19 schools and colleges at Michigan. We could have said we will have one representative from each of these and one from each administrative area. Instead, we organized the council by the mission domains of the university such as research; teaching and learning; and knowledge preservation. We named respected faculty leaders for each of these domains and they worked across the university in their domain. The IT Council has helped move thinking away from unit-by-unit needs to what the university as an enterprise needs and what are the most critical investments we can be making in technology. It has proven to be quite effective in setting strategy and building alignment of IT to the university's highest priorities.

CT: Are disruptive changes forcing you to be more collaborative with other higher education CIOs?

Patterson: We are in an era in which no single university is going to meet the challenges alone. Universities working together to meet demands of the future will be a critical part of our success. Right now we are talking with other

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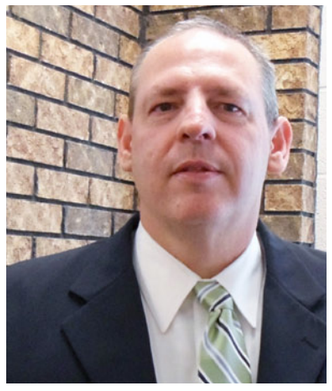
universities about working on a collaborative project on the future teaching and learning environment. It is time that the CIOs work together to think about things that can and should be done at scale across many of our universities. We have to be more open to collaboration across the industry as we look at the changes driven by research and teaching and learning at scale — learning analytics particularly.

David Crain, Southern Illinois University



*David Crain has been assistant provost and CIO for **Southern Illinois University** since 2012. He was previously an assistant vice president at the **University of Missouri**, where he was responsible for the technology infrastructure.*

CT: Looking back over your career at Missouri and Southern Illinois, has there been an evolution in your thinking about what the CIO does?

Crain: The focus of a CIO in higher education is certainly changing. For years we have focused on the "T" (technology) in IT and only recently have we begun to really focus on the "I" (information). I believe that this trend toward the "I" will continue with the explosion of big data and the Internet of Things. As a result of our digital initiatives at SIU, we suddenly have data on student performance that we have never had before. The key for us is to use that data in a way that positively impacts learning outcomes. We need to become even more entwined with the primary functions of the institution, which are teaching and learning, and research. We not only have implemented the Mobile Dawg program (tablets, digital course materials, mobile applications), but we are implementing numerous technologies for early intervention, student engagement and student advisement.

CT: Could you talk a little more about the origins of the Mobile Dawg project?

Crain: Mobile Dawg is a strategic initiative that is designed to improve learning outcomes. We believe that this increase in learning outcomes will also improve both recruitment and retention and have a positive financial impact on the university. This project was first proposed by myself as CIO but was quickly supported by our administration. It grew out of a desire to solve a number of problems including a perception by students and prospective students that our university was behind our competitors in technology; declining student success and retention rates; and the rising cost of education.

CT: What other strategic initiatives you are working on at SIU?

Crain: We are currently implementing a number of applications designed to make use of all of the data that is being collected. These include applications for degree mapping, transfer equivalency, student success modules, communication modules and advising applications.

I have also recently created a research-computing group to help provide technology solutions to our research faculty. Additionally, we have a number of important projects

VIDEO: University of New Hampshire CIO Joanna Young explains the No. 1 issue for today's chief information officer: staff development.

For captioning, visit CT on YouTube.

that are more tactical in nature, including IT centralization, e-mail migrations, voice over IP, fiber projects, additional bandwidth and much more. One of the challenges at SIU is to focus on the "I" when we are still behind our peers on the "T." We have to balance our investments in big data, analytics and software applications with much-needed investments in our infrastructure.

CT: Your job title includes "assistant provost" and at Missouri you were an assistant vice president. Do these titles signify that you are working with other execs on campuswide initiatives?

Crain: I believe the technology leadership exists at the appropriate level at the University of Missouri. The CIO is a vice president and reports to the university system president. This gives IT a seat at the table when systemwide initiatives are being discussed. At SIU, I report to the provost. This structure works for us because we have a chancellor and provost who are very much on the same page and have the same goals in sight. I also sit on our high-level executive committees such as the Chancellor's Executive Committee, the Chancellor's Planning and Budget Committee and the Dean's Council. This provides me with access to all of the other executives with whom we are working on campuswide initiatives.

CT: Are there other aspects of your job that are changing?

Crain: I am becoming more and more involved in classroom technology as we centralize IT. We are absorbing both the staff and responsibilities for technology in our various colleges, so I am inheriting classroom technology that used to be supported by colleges or departments. I am also playing a much bigger role in curriculum purchasing and distribution as it moves to digital formats.

Joanna Young, University of New Hampshire

*Joanna Young is CIO of the **University of New Hampshire**. Her information technology career includes a decade in executive roles working for property and casualty insurer Liberty Mutual Group as well as in higher education.*

CT: You have blogged that the CIO of today is like the CIO of yesterday plus a lot more; that CIOs are now involved from idea to implementation for the systems on which a business runs. How do you keep your finger on the pulse of your institution to understand those business processes?

Young: Through active listening and going to where the internal or external customer stands. By this I mean you have to be present in the forums and channels where they are present, and that can range from meetings and events to social media. You have to listen a lot and talk a little. Don't be afraid to invite yourself places.

CT: Who is it important for you to have the closest working relationships with?

Young: Collaboration is so important; there isn't one particular person or role. CIOs need to be close to the other leaders in the organization. I tend to have the most interaction internally with business unit leaders, whether revenue-generating or cost centers. Luckily with the ubiquity of communication and collaboration tools, it's easier now to connect.

CT: Is there a recent project that exemplifies your "CIO Plus" role?

Young: We have recently completed an online "shopping cart" for UNH so people can order items in an Amazon.com fashion. The CIO in me wanted technology that would enable a fast, flexible, quality customer experience. The chief financial officer in me wanted to streamline and consolidate the process and related financial information.

CT: You came to higher education from Liberty Mutual Group. Has that given you a different perspective from people who have been in higher education their whole careers?

Young: I've been reading lately about the rise of the generalist. What I learned prior to UNH was a lot of valuable technology, finance and leadership skills, and more importantly, how to learn and adapt quickly to different business conditions. Recently UNH added a law school, which is now UNH Law in Concord. The merger & acquisition skills I learned at Liberty Mutual served me very well during that integration.

CT: In terms of their structure and business processes, universities traditionally have been more bureaucratic and slow-moving rather than innovative. What have you done to bring a more innovative spirit to your campus?

Young: I would call myself an organized innovator. I'm pretty relentless about planning the work and working the plan. That might not sound innovative; however in a traditionally slower moving industry or organization, you have to institute a process that identifies and prioritizes new products and services, and be aggressive about managing and tracking the delivery (time to market) of those innovations. Project management was foreign to UNH when I arrived; now it isn't. Again, that's a "generalist" skill that was helpful.

CT: You were named to a list of 20 rising stars in higher education IT in terms of social media. Do you find social media valuable for engaging with other IT execs and thought leaders?

Young: Social media, used correctly, can accelerate a person's contribution to their organization. I learn about advances in technology, cool stuff my peers are working on and news from my primary vendors faster on social media than any other mechanism; and therefore I can share and apply it faster. You can find me at @unhcio or my blog at *cio.unh.edu*. However, social media doesn't replace other collaboration mechanisms, including face-to-face meetings. Social media supports and augments other interactions.

"At UW-Madison, we have consciously separated the role of operations leader for IT from the CIO, to allow the CIO to work more strategically on mission-critical services." — *Bruce Maas*

Bruce Maas, University of Wisconsin-Madison

Bruce Maas is CIO and vice provost for information technology at the ***University of Wisconsin-Madison****.*

CT: What are some organizational changes you have made to reflect the more strategic role that IT needs to play at Wisconsin?

Maas: When I became a CIO, I immediately sought to work with and empower the distributed IT leaders. [Now] we have a much more strategic and institutionally engaged group of distributed CIOs I am working with as partners. We have made a lot of progress in working together on institutional IT strategies, but there is still a great deal of work ahead of us.

At UW-Madison, we have consciously separated the role of operations leader for IT from the CIO, to allow the CIO to work more strategically on mission-critical services. A chief operating officer is responsible for IT operations and reports directly to the CIO. It takes time, effort, organizational development

and extensive relationship building to shift the focus of IT services to align with emerging needs of the university. Our COO John Krogman and I are working together to accomplish this. As the higher education business model is being disrupted by technology, I am steadily spending more of my time on teaching, learning and research infrastructure issues.

Typically, operational issues can be so demanding that they will at times trump planning or strategic issues. By separating these two functions, we are able to better focus on both aspects.

CT: How do you resolve the tension between the desire for departmental autonomy vs. enterprise efficiency?

Maas: We want to have healthy discussions about how to best optimize services at the right scale level. An example is the use of Moodle, which gradually sprung up in pockets around campus. We just completed a funded consolidation of multiple Moodle instances to an enterprise service run by Engineering for the campus. That is the type of conversation we want to continue having. It is not either/or, but when does it make sense, gravitate things from edge to core and make it more scalable.

CT: UW-Madison has an Educational Innovation (EI) initiative that includes experimentation with MOOCs. Was it important that IT execs were part of the core team?

Maas: The CIO was at the table in early planning phases, but it quickly also included our Director of Academic Technology Linda Jorn. Linda earned a greater stake by making contributions that were greatly valued by academic colleagues. This led to her also being appointed associate vice provost for learning technologies, which was an important message that she was also a key leader on behalf of the provost. This dual title connects her with both the COO and CIO, which gives her, and the EI initiative, support from both leaders by definition. We are working hard to have the academic mission drive our work directly, and closely align by providing scalable services. Given that there is often significant ramp-up time for scaled services, we need to be a proactive part of the senior leadership team, collaboratively educating our colleagues about IT infrastructure needs along the way.

CT: Do you mentor your team to take positions of greater responsibility in the university?

Maas: Yes, I see mentoring as a key role of the CIO. We have highly talented individuals throughout our university and often all they need is some encouragement and support to take the next step. The best organizations are those in which the talents of all individuals are utilized effectively, including as they grow in experience and ability.

Bob DeWitt, Antioch University

*DeWitt has worked for Ellucian as a transitional CIO on several campuses. This year he is transitioning from being an Ellucian employee to working for multicampus **Antioch University** full time.*

CT: What have you have learned during your assignments as a transitional CIO? Have the expectations of what the CIO can accomplish changed over the last few years?

DeWitt: I have noticed that even small and medium-sized institutions have moved up the "technology maturity ladder." Previously, there was a focus on improved "customer service," combined with lowering the cost of delivering services to students. Many institutions now have relatively mature customer services, and are being driven to focus attention on the strategic use of data for managing the institution. This is partly being driven by increased competition in the higher education space, and partly by increased requirements by funding agencies for accountability. For example, community

colleges have moved fairly rapidly from a culture of "access" to a culture of "success," so colleges now need to demonstrate their ability not just to recruit students but also to retain and graduate them in a timely manner. This has created new integrated enterprise data collection and reporting needs, and the CIO is at the center of identifying and responding to those needs. The CIO has finally moved significantly away from a focus on plumbing and toward a focus on information, which of course is the essence of the CIO title. This is allowing the role of CIO (in higher education at least) to evolve finally to become a true C-level player.

WANTED: CIO

What are colleges and universities looking for in a CIO these days?

Many are increasingly emphasizing the ability to promote the use of technology in instruction, said Phil Goldstein, a founding partner in Next Generation, a San Anselmo, CA-based IT recruiting firm with a focus on higher education. That may open up possibilities for people with experience in academic technology support groups, but only after they also can prove their ability to run the whole IT organization.

Goldstein's partner, Mary Beth Baker, noted that many universities recruiting CIOs now want some people in the recruiting pool who are from corporate settings, although experience in higher education and its culture of collaboration is preferred. "But some are trying to change the culture, and they would like to bring in a sense of process innovation and greater agility."

CT: Did you have to establish personal relationships or lines of communication with certain people on campus in order to be effective?

DeWitt: One of the mistakes that some higher education CIOs make is to engage primarily C-level leaders to the exclusion of other members of the university community. Yet the culture of higher education is different from corporate culture in that faculty and students (and other staff) want to be part of the decision-making process. I believe that to be successful, the CIO has to build communication channels to all constituents, both formally through governance structures and informally by being open and responsive.

CT: How have those partnerships helped you prepare for big initiatives like the launch of Antioch University Connected (AUC), a new fully online university?

DeWitt: One way that CIOs can contribute to new initiatives like AUC is by leveraging their experience in building external partnerships. Chancellor Felice Nudelman recognized that in order to launch a fully online university in a short period of time but at a high level of quality, Antioch would need to engage a [vendor] partner with experience and a successful track record in the online space. She asked me as CIO to manage the selection process for the partnership. The process worked well because we were able to engage the very capable university leadership team via a structured process that helped to identify the strengths and weaknesses of the vendor candidates.

"To be successful, the CIO has to build communication channels to all constituents, both formally through governance structures and informally by being open and responsive. *— Bob DeWitt*

CT: What are the essential skills and focus areas of CIOs in 2014?

DeWitt: While staff members must be able to manage "the plumbing," the CIO has to focus on collaboration, partnership building and institutional effectiveness (defining success, measuring progress, continual improvement). **CT**

David Raths *is a freelance writer based in Philadelphia.*

go back to TOC

NEXT: Art Schools Keep IT Departments on Their Toes

Art Schools Keep IT Departments on Their Toes

With the sheer variety of ever-changing tech needs combined with the limited staff and budget of small institutions, art schools may be an IT leader's perfect storm.

MOST I.T. EXECUTIVES in higher education will tell you that they have difficulty keeping up with the pace of technological change. But this can be especially true for those in charge of IT departments at art and design schools. In part, that's because these curricula require an array of technology specializations, including animation, digital video, interactive electronic projects and robotics. Also, the tools and media students need to explore to stay relevant in the marketplace are always changing.

"We try to have someone in academic technology conversant with every technology used in the departments," said Meg Young, director of academic technology services at **Massachusetts College of Art and Design** (MassArt) in Boston, which has around 2,000 undergraduate students and a few hundred graduate students. "Almost every department has some new technology that they want to explore. I tell people that I have to know 20 programs that are each updated every six months."

Technology is embedded deeply in an art school's curriculum, a fact that was eye-opening for Mara Hancock, CIO of the **California College of the Arts** (CCA) in Oakland. In 2012, Hancock made the transition to running an art school IT department from her previous position as director of educational technology services, director of online learning and associate CIO for academic engagement at the much larger **University of California, Berkeley**. Her IT department of approximately 40 people at CCA supports just under 2,000 students.

Changing technologies can quickly redefine what students need to learn in the classroom, and IT infrastructure must change accordingly, Hancock pointed out. "If Adobe is moving to the Creative Cloud, we need to provide it because it is going to be a core competency for our students, so we have to provide the horsepower in our labs," she said.

The technology tools and media that art students need to stay relevant in the marketplace are always changing.

Alison Yin, Courtesy of California College of the Arts

With the BYOD movement, some liberal arts schools may be thinking about eliminating computer labs, she added, "but here they are so critical for us because students need access to such a rich, wide range of software and architectural platforms to do deep renderings."

Staffing and Funding Issues

The CCA IT organization's largest unit is academic technology. "We have two campuses, one in San Francisco for

design and architecture and the other in Oakland for fine arts and photography," Hancock explained. "We have to provide service bureau-like support for them and mentor students. Our system administration group is shallower than on a large campus like Berkeley, but we still have to cover all the bases."

Funding for technology upgrades and staff hires can be a challenge for art schools. "We are unique among art schools in that we are a public college, so we are perpetually underfunded both in terms of equipment and software as well as support staff," said MassArt's Young, who also teaches two classes in the fashion program. It is always challenging to find people with the skill sets needed who want to work for what the art college can pay, she added. "I was hired in 1995 to support multimedia and CD-ROM production, so you can see that what we do evolves with technology trends. We expand our facilities based on what we hear from alumni, faculty and students. Faculty members and chairs query recent alumni about how their skill sets match the requirements of the workplace."

"Our system administration group is shallower than on a large campus like Berkeley, but we still have to cover all the bases."

— Mara Hancock, California College of the Arts

But Young said MassArt's executive leadership fully understands the need to stay current with technology. The school's president, Dawn Barrett, came to MassArt in 2011 after serving as dean of the Architecture and Design Division at the **Rhode Island School of Design**. "There is no convincing needed," Young said. "And our department heads understand that they will cease to be competitive if they don't

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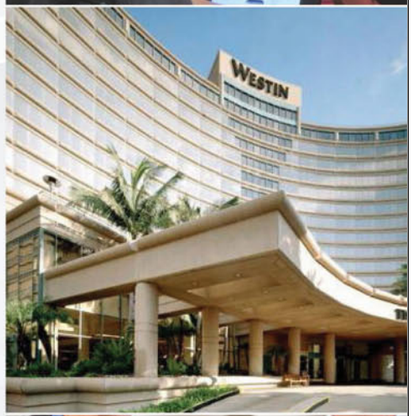

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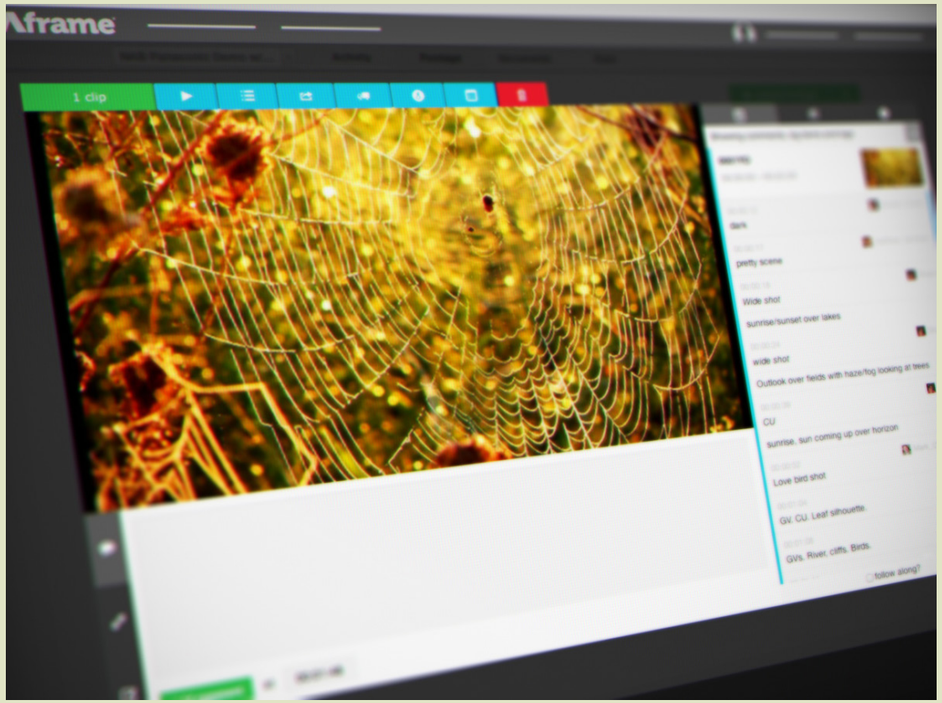

Filmmaking courses at **Northeastern University** (MA) require students to share their work, critique it and prepare it into a final project. That process once meant sharing DVDs or sending large files across the campus network, recalled Ron Starr, director of media studios and an instructor in documentary film production at the school.

Looking for a way to make it easier for students to share projects with faculty and with each other, Starr starting using the Aframe cloud video-production platform in 2012. Students use Aframe to store full-resolution media in the cloud and move it quickly between partners. They have the option of delivering it as tiny proxy files sent as Web links so people can review video on their mobile devices.

"This allows us to share media without all having to be here at the same time," Starr said. For instance, when students turn in their work at the end of a semester, the instructors don't have to be on campus to watch them. "And in classes where there are group projects, students can much more easily share what they have done," he added. "As we get more instructors using it, it will get more integrated into how we teach. We were able to do this without involving central IT. It is pretty neat that someone who is a non-techie like me can integrate it into the curriculum right away."

Another benefit, Starr noted, is that Aframe allows Northeastern to designate users and accounts. "An issue we have with sharing videos is that students will often want to upload to a YouTube or Vimeo account. Unfortunately, that does not take into account the legal restrictions," he said. Most student projects use copyrighted music (and occasionally video). It is allowable in class under the educational exemption, but not in the world at large. Additionally, students rarely get releases from their actors, and the presumption is that the videos will only be seen in a classroom setting. Using Aframe technology removes the liability for illegal dissemination of video/audio and allows the instructor to designate who can legally and legitimately view the material.

keep up with technology." For instance the 3D area, which includes jewelry, glass, ceramics, fiber and metals, needs to add exposure to 3D modeling or its students won't be competitive, she noted, and 3D printing is another hot new area.

In the budgeting process, CCA's Hancock has CIO advisory groups on both the administrative and academic sides, which offer input on where to focus IT's efforts. She also hears from technology liaisons, who understand the day-to-day needs of the departments, including those of adjunct professors. Studio shop managers also straddle the two worlds of technology and facilities as they support department chairs.

There is never enough funding to do everything you want, Hancock said, "but we are doing pretty well to meet the broad needs. We have created a refresh cycle for the labs and we are becoming a more mature IT group. We have a great pool of alumni to help meet the challenge of finding people to support diverse academic technology needs."

Hancock also noted that the Association of Independent Colleges of Art and Design has a CIO group that allows her to compare notes with colleagues. "We have a listserv," she added, "and AICAD has helped us work with peers to capture data for benchmarking." **CT**

David Raths *is a freelance writer based in Philadelphia.*

go back to TOC
NEXT: Projectors Get Interactive

Projectors Get Interactive

At Indiana Wesleyan University, interactive projectors have kickstarted collaboration in the classroom.

THE TRADITIONAL role of a projector in the classroom seems to be beaming a PowerPoint slide onto the whiteboard up front, giving students something else to stare at besides the instructor's face. While that may be the norm, students have changed, and so should the job of the projector, according to Brian Hertzog, director of institutional media technologies (IMT) for **Indiana Wesleyan University**. When students come to class, he believes, "They want to engage with one another. They're yearning for that collaboration."

While constructing a new seminary building on campus, Hertzog and his IMT team wanted to try something different in one of the classrooms to facilitate collaboration. He turned to his vendors for advice, who recommended furnishing the space with a bunch of flat panel displays. After all, the university was already using those in other areas.

"That did not work for us," he recalled. "When you mount a flat panel on the wall, it destroys that space. You are set with a flat panel and nothing else is going to happen on that wall."

The crew also considered installing multiple interactive whiteboards, but the cost would be a lot more than the university could afford. So IMT came up with an alternative: cramming the walls with inexpensive, ordinary whiteboards. "Our seminary faculty are unique. They love to write. They will use any whiteboard that you give them," Hertzog explained. In conjunction with the whiteboards, five Epson BrightLink interactive short-throw projectors mounted above each wall serve the classroom's collaboration needs at a "fraction of the cost of interactive whiteboards," he said.

INTERACTIVE PROJECTOR ROUNDUP

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BoxLight ProjectoWrite6
Dell S500wi
Epson BrightLink
Hitachi CP-AW2519NM
Smart LightRaise 60wi

SLIDE SHOW: Six projectors that bring interactivity and collaboration to the classroom

The use of projectors helped make the setup more flexible by preserving the traditional whiteboard space for offline work. Noted Hertzog, "Students don't have to use the projector, but if they do, it's still interactive, and they can do annotation, write all over it and it can all be cap-

tured, saved and e-mailed as a JPG."

Plus, unlike flat panels, these specialized projectors don't need remote controls that could "walk away" from the classroom; all controls are projected right on the wall.

After checking out projector models from a couple of vendors, IMT decided on the BrightLink in part because there's no software required for the interactivity, Hertzog said. "It has a built-in whiteboard, so you can turn it on, grab the pen and start writing. [With] other brands you have to install their software; you have to go through a few other things to get them to work."

Now, in a room outfitted with these projectors, students can break up into groups and congregate by a given projector to do collaborative work. Dual pens allow two students at a time to mark up the projected image. "It's as if they are working on a virtual whiteboard — which they are — and able to recall that work at any time. They don't lose their information. It's a pretty powerful tool," Hertzog said.

Expanded Use

The technology has been "a huge success" on campus, said Hertzog. Since the installation of interactive short-throw projectors in one classroom, the university has added 16 others throughout the campus. A new nursing and science building will add an additional 37 projectors, including some in classrooms that will remain open for student use

HOW IT WORKS

An interactive projector adds interactivity to any flat surface. When the user drags a finger across the wall, for example, a line appears. Controls are displayed in a panel to the side and can be chosen with a finger poke. For more precision or setting color or other aspects of what's being written or drawn, "light," "smart" or "interactive" pens provide stylus and mouse functionality.

SOFTWARE TOOLS FOR GROUP SHARING

Mersive's Solstice

In classes where you want multiple users to share the content from their laptops, tablets or smartphones on a single display, two solutions deserve a look.

Install Mersive's Solstice on a Windows 7 computer connected to the network, load client software onto user devices, have those users connect to the same network, and everybody can connect and share their individual content on the same screen (including content posted from the cloud). A "roundtable" mode gives everybody equal access for posting; a "podium" mode leaves display control in the hands of the presenter, who can approve or deny requests to add to the shared screen. Although edits can only be done by the person sharing the specific piece of content, updates are shown as they're made. The software works on projector displays, flat panels and video walls; there is no limit on the number of simultaneous users.

Tidebreak ClassSpot works similarly. The main software is loaded onto a server and the user devices run a client edition, allowing participants to share their device screens. The difference is that ClassSpot specializes in helping classes to shift between small group sharing and whole-room sharing. Multiple users can control the same screen simultaneously from their devices, allowing for interactive projector-like collaboration, including annotation. The materials shared during class are saved, allowing for students to download the archive or letting the teacher post the archived file to a content system. Users include the School of Law at the **University of Missouri-Kansas City**, **Winona State University** (MN) and the **University of Southern California**, among others.

when courses aren't occupying those spaces. "Students can come in and use that and collaborate with one another. It's different from giving them another space with a flat panel. It adds that extra collaboration piece," he explained.

IMT found use for interactive projectors in old buildings too. The music department occupies rooms with high ceilings and a lot of storage cupboards. Previously, projectors were held in place at the bottom of 20-foot poles. The interactive short-throw projectors could be mounted on the walls over whiteboards, a much simpler setup that gives music faculty instant collaboration features, noted Hertzog.

Advice

Though Hertzog is a strong proponent of interactive projectors, he did not recommend dumping traditional models altogether. They still have a home in larger lecture rooms, for instance. He advised using the interactive short-throw models for spaces with 35 students or fewer, where the class can be broken into smaller groups for collaboration.

He also recommended testing the accuracy and responsiveness of the interactive projector as part of the evaluation process. Users want to be able to go to the surface and control their computers as they normally do — without having to slow down their hand motions, he said.

"Buy one, just one. Put it on one room and encourage faculty to come in and take a look at it. I can guarantee you that you'll be buying and installing 20 within the next two years," Hertzog enthused. "We can't install them fast enough. Everyone wants an interactive short-throw projector for multiple reasons, because of the flexibility it gives them and the usability and the efficiency. It has been a wonderful tool in our classrooms." **CT**

Dian Schaffhauser *is a senior contributing editor for* Campus Technology.

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Digital Networks and the Future of Higher Ed

In a new position at UT Arlington, George Siemens will research how technology and digital networks influence the knowledge development process in society.

By Mary Grush

This spring, George Siemens is moving from Canada's **Athabasca University** to the new Learning Innovation and Networked Knowledge (LINK) lab at the **University of Texas at Arlington**. Both locally at UTA and through collaborations with other institutions worldwide, the internationally known and highly respected researcher will delve into how technology and digital networks influence the knowledge development process within society, and related implications for the future of higher education institutions. Siemens also plans to create a global research network to evaluate online learning and digital learning and how they impact the role of the university.

CT: What research areas are you planning to focus on at the LINK lab at UTA, and why are they important for higher education in general?

Siemens: We face a large number of challenges in education. These challenges aren't clearly understood in the sense that we are grappling at what this looks like from a variety of perspectives. There really isn't a clear consensus yet on what education is becoming — what education's role is going to be in the future of society and in the development of knowledge.

Education leaders and faculty are grasping for ways to understand the future of higher education in societies where individuals can access a lot of their learning needs on their own. The role of the institution is somewhat uncertain going forward, especially as we see a growing diversity in the learner population. More students now returning to or entering the university sector are not traditional 18- to 25-year-old bachelor's or master's degree attaining learners. There are students who may have been in the workforce for a while, but the economic structure of their industry has changed and now they are looking at rescaling, or perhaps entering a different field, or maybe updating their skills to stay current.

At the LINK lab in particular, the main intent of our research space is to evaluate how digital and technological networks impact the knowledge development process within society. Questions include: For individuals, how do they get degrees or credentials? For businesses in a particular region, what economic values do universities place within the local societal context? And for society, what does it mean to have an educated populace — one that is well informed and able to engage in relatively complex topical areas? We want to look at these questions and the role of the university in a digital and technologically enabled system.

More specifically, our research includes data analytics — how do we evaluate learner performance, teaching performance, and identify or predict at-risk students? We'll also look at micro-credentialing or alternative credentialing approaches — when learning is happening in a variety of spaces beyond the classroom, for example in the workplace, or in a course on Coursera, how do we give credit? Among other systems, we want to look at social and technologically guided learning. One of the questions becomes, what happens if the tools that we use are no longer treated just as tools, but are actually

more active agents in our development of knowledge? You'll see this reflected in the growing influence of artificial intelligence, machine learning, and other areas where we rely more and more on technology as a cognitive assistant. What does that mean for the teaching and learning process? For any interactions involving a learner, technology and knowledge growth, we want to understand that process and the implications for universities going forward.

CT: Do MOOCs factor into your research plan?

Siemens: MOOCs certainly become a part of it. But I just want to qualify that and state that MOOCs are not a driving trend; they are not phenomena to be understood. There is value in understanding them better, and understanding the role that they are playing, but actually, they mostly reflect a variety of change pressures. They are more a mirror of change pressures than they are a driver of change in themselves.

Still, we have technology at our fingertips now that allows us to do a lot of what traditional universities would have done for us in the past in terms of giving us access to content. So, openness is an important factor. The openness component — open scholarship and open teaching and learning — is something that we will be looking at in the lab as well.

MOOCs are a bridge that may provide traditional universities with an opportunity to start experimenting with digitally or technologically enhanced learning. This is something that a few early leaders have already taken on: The **University of Phoenix**, for example, and other for-profits, plus a few public systems, such as **Penn State**, have been very aggressive in developing their online capacity. Some other universities that have largely ignored the online space have more recently discovered that they really need to pay attention to this. So I think MOOCs will provide a lot of value, and not necessarily just in terms of moving universities online, but I think more so in helping those universities start to use technology more strategically.

CT: Will your research in the LINK lab be primarily focused on teaching and learning technologies? What about technology that supports scholarly research and knowledge generation within the disciplines?

Siemens: On the learning side, my interest is focused on the experience of the learner and of the individual, their relationship with the university and how the university system needs to change to better accommodate the emerging profile of students and student activities.

But you're right to target also the process of knowledge growth through the work that researchers are engaged in. [For example, in my current lab], we've experimented in this area, along with SoLAR, the Society for Learning Analytics Research, by setting up a distributed doctoral network.

Any time there's a knowledge growth process — whether that growth happens with a learner in a classroom first interacting with a new idea, or with a researcher who has been grappling with a concept in her lab for a long time — if you can improve that process by connecting more people into it, by making it distributed across a larger network of participants, then you are essentially looking at the way technology and digital networks influence the knowledge development process.

SARS research is an example I sometimes use: In 2003 when the SARS epidemic first started, a lot of medical fields were absolutely baffled, because this was something they hadn't encountered before, and they weren't quite sure what it was. But in a very short period of time — just over two months — a group of research labs globally were able to identify the coronavirus as being the cause of SARS, and that presented some treatment options. This was essentially a networked knowledge

"MOOCs are a bridge that may provide traditional universities with an opportunity to start experimenting with digitally or technologically enhanced learning."

problem-solving process. It was a real-time, practical knowledge need that was resolved through digitally connected networks. The time was 2003, and a large part of the exchanges were done via e-mail and the simple sharing of lab results. But this was the process that solved a very complex knowledge problem through the use of fairly basic digital networks. So, that's what I'm looking at from a research perspective: the way we can use all this potential.

erable competency and a large capacity for and investment in online learning. Still, beyond advancing the field of research globally, we want to have an impact locally at UTA. That may be through work on advanced technology pilots, such as wearable computing, or analytics programs within the UT system, or helping faculty with online pedagogical practices, or making positive impacts for students.

It's also important to note that we *think in networks*, and we don't want to make siloed UTA initiatives. We are looking forward, over the next several months, to shaping a global research network that evaluates online learning and digital learning and how they impact the role of the university in society. Different institutions face different challenges and have different strengths to share through a global network. What's going to be of real value is that networked component that goes beyond an insular, siloed focus of what the lab offers the local institution.

And there has to be a practical intent beyond the publication of research. We want to have a practical impact, so that the work that we do will make something happen on the ground and produce real change within different university systems. I'm looking forward to learning how to do all this in collaboration with peers and colleagues internationally. That's the part that excites me.

"In the future, the university will become much better integrated into all aspects of society. We will have lifelong, rather than four-year relationships with our universities."

CT: How do you plan to approach your research initiatives working within UTA, and in collaboration with other institutions and organizations?

Siemens: The University of Texas at Arlington has very strong programs in online and distance learning, which have received numerous national awards. UTA has one of the largest existing nursing programs online. So, UTA already has consid-

CT: For higher education in general, what do you anticipate the most important impact of your research might be?

Siemens: The biggest element to consider is the opportunity universities have to remake themselves. Universities have over the past several years heard predictions of their becoming obsolete, or how residential institutions would become obsolete — but we're not seeing that. I think we're going to see, going forward in the next decade-plus, globally, an *increase* in the number of universities and education systems. And that makes sense as we are entering [or moving more deeply into] a knowledge era: We need to invest in knowledge institutions.

King Abdullah University of Science and Technology, in Saudi Arabia, for example, is investing very heavily in improving the quality of their education, because they realize that when certain natural resources are no longer available in the region they will need to have something else as a system to be able to compete globally. Another example in the Middle East, Qatar, has invested in what they call Education City, where six U.S. universities are represented.

These institutions realize that the future is going to be in knowledge development processes. In the past, most institutions have served just one segment of that process: the early adult stage of our learning. In the future, the university will become much better integrated into all aspects of society. We will have lifelong, rather than four-year relationships with our universities.

I think universities are aware of and paying attention to these trends. It's actually quite a hopeful time. CT

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