HIGHER ED: MEET THE CHIEF DIGITAL OFFICER

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Does Higher Ed Need a Chief Digital Officer?
Technology is fundamentally changing the nature of higher education — and its strategic leadership.

I MUST ADMIT, I’m skeptical of any new C-level title, especially one as amorphous as chief digital officer. What can another executive accomplish that isn’t covered by existing leadership and the talented people throughout an organization? And what exactly does “digital” mean, anyway?

The definition of digital is particularly unclear in higher education, and it varies from institution to institution. It has a lot to do with online learning, but could also include things like social media, digital libraries, mobile technology, data analytics and more. A better way to think about the “D” in CDO might be disruptive change: the way technology is fundamentally redefining higher education.

Arguably, it’s already the strategic role of the CIO to guide a university through technology change. But disruptive change is so big, so all-encompassing, that perhaps a CDO is needed to help bring it into focus — at least until it becomes second nature to everyone on campus. As Sree Sreenivasan, former CDO at Columbia University, noted in this month’s cover story, “A chief digital officer is the equivalent to being a chief telephone officer when the phone was first introduced. People wanted to understand the strategy behind it, how to implement it and how to use it. They wondered if it would disrupt their life. Eventually everyone figured out how to use a phone and it became part of the workflow. There is a chance that will happen with this and you won’t need a chief digital officer anymore. Everybody in the building will be a digital officer.”

How do you know whether or not you need a CDO? In “Don’t Let a Chief Digital Officer Steal the Best Part of Your Job,” Forbes columnist Dan Woods provides a helpful scale:

“If you think the role of CDO is passé, it is likely you work at a company that is a digital native, like Amazon, Facebook, Google, or that ilk. To the staff at these firms CDO means nothing. You might as well just add digital to everyone’s title, because everyone is focused on optimizing a business that has digital DNA.

“If you already have a CDO or wonder how a CDO might help accomplish a variety of digital initiatives at your company, you probably have a transformation underway and are attempting to figure out how to make it work. Such companies are usually wide awake to the digital transformation at hand and are in the thick of a struggle.

“If the idea of a CDO just seems like a fad or irrelevant, it is likely that the impact of the current digital transformation that is changing almost every industry is perhaps lost on your company. Or you could be in the rare company or industry, and there are some out there, that really will not be digitized in the foreseeable future.”

Where does your institution fall on the CDO scale?

Continue the conversation.
E-mail me at rkelly@1105media.com.
**IPAD PROGRAM CUTS DEGREE COST.** Lynn University in Florida will slash the cost of a degree for non-traditional students by launching an evening undergraduate degree program delivered through the iPad Mini. Starting in fall 2015, “adult students will be able to pursue their undergraduate degrees online, on campus or through a combination of both for about the cost of a single year’s tuition for a traditional degree program,” according to a university statement. Read the full story online.

**SHARING MUSIC.** The 4,200 students and 600-plus faculty at Berklee College of Music (MA) now have a new way to file their digital assets. The institution, which has campuses in Boston and Valencia, Spain, recently contracted with Widen for use of its Media Collective for cloud-based digital asset management. The Widen service will be used as a shared database to make contents — both audio and visual files — searchable, accessible and shareable. Read the full story online.

**OER AWARENESS.** Nearly two-thirds of faculty members in U.S. higher education are generally unaware of open educational resources (OER), according to a recent study from Babson Survey Research Group and Pearson. Funded by The William and Flora Hewlett Foundation, the project surveyed 2,144 faculty across a wide range of positions and institution types to explore the role of OER in higher ed. Among faculty who are aware of OER, 79 percent reported that they use it in some capacity. Read the full story online.

**ALLOCATING INTERNET2.** Internet2 has added a new resource that enables its national education network to be divided into segments that can be allocated for use as multiple, discrete private networks by specific research or other user communities. The “Flow-Space Firewall” has been installed in the Internet2 production network, allowing it to be partitioned across nearly 40 100G-attached access nodes throughout the country. With the new firewall in place, one allocation will be prevented from consuming resources set aside for other allocations. The firewall software was commissioned by the community organization and co-developed by Indiana University. Read the full story online.

**KEEPING UP WITH WIFI DEMAND.** Illinois State University is upgrading its wireless network to support more than 30,000 mobile and wireless devices, including collaboration tools and classroom technology. With students bringing up to five mobile and wireless devices onto campus, and faculty using Apple TV, Chromecast and other technologies in the classrooms, the university’s legacy WiFi network couldn’t provide the coverage, reliability and speed that users have come to expect, especially in high-density areas. To bring its WiFi up to speed, the university’s Administrative Technologies department is rolling out an 802.11ac solution from Aruba Networks. Read the full story online.

**BIG DATA DEGREE.** To keep pace with projected job growth in fields related to big data analysis and management, the Indiana University School of Informatics and Computing is introducing a new master’s degree pro-
Comprising courses from computer science, informatics, information science, library science and statistics, the program offers two degree paths—a technical path and a decision-maker path—allowing students to customize their educational experience to meet professional goals, according to the university. Students will be able to take courses on campus, online or in a blended version with online and in-residence components. Read the full story online.

EvaluationKIT has upgraded its online course evaluation software with newly released dashboard, navigation and responsive design functionality. Read the full story online.

Epson America’s new WorkForce WF-100 mobile printer features built-in wireless, WiFi Direct2 for printing directly from mobile devices, and a rechargeable battery. Read the full story online.

Kensington’s PresentAir Pro Bluetooth 4.0 LE Presenter can present, control or edit media from a user’s device, and functions as a touch-activated stylus. Read the full story online.

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Removing the Roadblocks to a Digital Campus
Going digital can increase access and reduce costs for course materials, yet structural and behavioral roadblocks often prevent progress. Here are technological, logistical and change management strategies to facilitate digital implementations. Sponsored by Vital Source Technologies

Upcoming Events
Jan. 21–24
Association of American Colleges and Universities
2015 AAC&U Annual Meeting
Washington, DC
Feb. 9–11
Educause Learning Initiative
ELI Annual Meeting 2015
Anaheim, CA
Feb. 18–21
Instructional Technology Council
eLearning 2015
Las Vegas
March 2–6
Society for Information Technology and Teacher Education
SITE 2015
Las Vegas
March 8–11
League for Innovation in the Community College
Innovations 2015
Boston
March 10–13
Digital Signage Expo 2015
Las Vegas

To submit your event, e-mail editors@campustechnology.com.

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Why Wearables Are the New Gateways to Human Knowledge

The use of Google Glass and other wearable devices in higher education is still experimental, but the technology is opening up exciting new possibilities for teaching and learning.

RAY KURZWEIL, American author, scientist, inventor, futurist — and now director of engineering at Google — said, famously: “Mobile phones are misnamed. They should be called gateways to human knowledge.”

That gateway is widening, especially on campus, where wearable tech is becoming the latest portal into human knowledge — and the future. “Wearables are just a continuation of the smartphone industry,” remarked Emory Craig, director of e-learning and instructional technology at The College of New Rochelle (NY), “but they change everything.”

CT asked Craig and his colleague Maya Georgieva, associate director of the Center for Innovation in Teaching and Learning at New York University’s Stern School of Business — both visionaries in the field of wearable technologies in higher education — about the future of wearables in teaching and learning.

CT: Why is wearable tech such a compelling tool for today’s students and faculty?  

Craig: Since the beginning of the mobile revolution, we’ve seen rapid growth in social media and the ability to stay in almost constant communication with each other. I think we naturally gravitate toward technology that becomes more personal and fosters communication. Wearable devices give us new insights on how our minds and bodies function that are impossible to see with our current senses. The possibilities associated with that perspective are very hard to resist!

CT: What will be the impact of wearable devices on higher education in general?

Craig: It’s so early in the game right now for wearables that we can only speculate about the potential impact on higher education. Technological developments always have intended and unintended consequences, and it’s the latter that interests me the most. How wearables develop will largely depend on the ecosystem around them (the apps created by independent developers).

If you look at the first smartphones, they were incredibly immature compared to what we have today. Now, with over a million apps available, we can do things we never anticipated — photo and movie editing, streaming music, gaming. Smartphones are even becoming devices for virtual
MOBILE COMPUTING

CT: What are the most popular wearable tech devices on campuses today?

Georgieva: Colleges are starting to open experiments with wearable technologies such as Google Glass, the Narrative Clip and Oculus Rift. There are experiments going on in various undergraduate programs, medical schools, journalism, business schools — and more pilots will start later this year and next spring.

Everyone is tentatively venturing into a new landscape here. Most projects focus on the ability of Google Glass to capture first-person perspective and hands-free video, such as recording with Glass within and outside of the classroom. The same goes for the Narrative Clip, which works great for capturing images during field trips or lab experiments.

I think that the most common applications will be students or faculty capturing video and, for the brave, some applications that can work for online teaching, videoconferencing and one-on-one sessions, such as connecting with experts and mentors to provide coaching and feedback. In addition, we are starting to see some interesting applications for students with disabilities, in which Google Glass or other wearables can provide visual, auditory and physical assistance.

Whether it is Glass, the Narrative Clip, the Oculus Rift or another device that will be released in the next few months, the most exciting ideas will come from our students. I think that the best applications are yet to be developed on college campuses by students tinkering with what is available, building new apps, testing it with new games.

CT: What are some of the obstacles to wearable tech?

Craig: Right now, the major obstacle is battery life, especially for Glass-type devices that you wear on your face. Batteries are, relatively speaking, large and heavy for wearables. This will change, but battery life is not growing nearly as rapidly as processor speed and storage capacity.

The other challenge is user interface (UI). Obviously, voice control (which is getting there, but is not perfect) and touchpad-like areas (as on Google Glass) are probably the future of UI. But the other approach is to do what the Narrative Clip Lifelogging Camera has done: Narrative Clip has no on/off switch and it functions continuously unless you put it facedown on a surface. A significant portion of the market will probably move in that direction — devices that will just always be on.

“We are on the cusp of exciting new developments with wearables that will provide fertile ground for personalized, connected and immersive learning.”

CT: How should higher ed institutions integrate wearable tech devices into the educational system?

Georgieva: My recommendation to the higher ed community is to not try to force wearables into our learning frameworks, but rather to create a space for students to play with wearable tech. I think we are on the cusp of exciting new developments with wearables that will provide fertile ground for personalized, connected and immersive learning. Things are about to get a lot more interesting — and fun — in 2015!

Craig: Be proactive. Experiment and try things out. Stay abreast of the developments in the wearable market, and don’t assume that this is just a minor refinement of the mobile revolution. Wearables will start out largely as prod-
DESKTOP AS A SERVICE (DAAS): A PERFECT FIT FOR HIGHER EDUCATION

An Exclusive Industry Perspective From Campus Technology and VMware Horizon Air

How Desktop as a Service (DaaS) solves the end-user computing challenge for colleges and universities.

With student computing devices proliferating faster than anyone could have imagined, campus IT departments are under enormous pressure. Higher education institutions need to deliver anywhere, any device, any time computing capabilities in order to compete effectively for students, even as user expectations rise higher and higher. Meanwhile, mobile devices and the BYOD phenomenon, along with budget cuts, are taxing IT’s ability to deliver services as never before.

Enter desktop virtualization — the concept of removing management of capital-intensive, maintenance-heavy and quickly obsolete PCs from user desktops completely. Instead, thin or zero clients serve user needs, shifting the actual computing to a back-end datacenter. Adding further to the virtualization concept is desktop-as-a-service, or DaaS, which moves back-end services and support off campus and into the cloud. With VMware Horizon®Air™ Desktops and Apps, VMware handles all traditional datacenter services, including maintenance and support of the supporting infrastructure. The result: a huge reduction in complexity in supporting new and legacy devices, freeing the IT staff to focus on other issues. The capital equipment budget can be slashed; there is no need to purchase and support new back-end servers, or even to maintain a campus datacenter.

DaaS also addresses one of IT’s biggest challenges: BYOD and mobile computing. Once the system is configured, any device can access a Windows desktop and be used anywhere, at any time. With virtual desktops and the cloud, everyone is served the same high-quality computing experience. Faculty, students and staff can each use completely different platforms and operating systems but still have the same desktop interface. And there are no more risks of sudden downtime or middle-of-the-night service issues — DaaS is fast, reliable and secure.

Horizon Air Desktops and Apps simplify the delivery of Windows desktops and applications as a cloud service. DaaS means campuses can deliver powerful computing to any device, anywhere, and all with predictable, utility-style monthly pricing. Institutions can ramp up additional computing power when needed — usually at the beginning and end of each school year — then scale back as student needs level out over the semester. DaaS addresses legacy computing issues, including Windows XP compatibility concerns. With DaaS cloud computing, colleges and universities can continue to run Windows XP apps securely, and can repurpose older PCs as thin clients.

Let the virtualization experts at VMware explain how Horizon Air Desktops and Apps offer simple, cloud-based, any-device, anywhere virtual computing, solving some of today’s biggest computing challenges. Download your Industry Perspective Report today!
We’ve often treated technology as a “productivity tool.” But just as we’ve seen with smartphones, we shouldn’t underestimate the many ways that portable devices can transform how we communicate, learn and work together. Wearables have the potential to have a huge impact on the teaching-learning environment. The best way for IT departments and faculty to be ahead of the curve is to start the conversation now, embrace change and always be open to innovation.

**CT: What challenges are in store for IT departments?**

**Craig:** Many of us are still working through the challenges of the mobile revolution, setting up mobile device management servers to cope with many devices that students, faculty and staff use.

The average traditional-age college student is already showing up on campus with about seven technology devices. I’ve seen predictions where we may have up to 10 wearable devices on our bodies and clothes. If that turns out to be true, don’t be surprised to see the average student show up with 15 or so devices in a few years. Whatever the number will be, we’ll look back and laugh at the simplicity of our current era with “only” seven devices per student.

It will get more complex, but we have to see if wearable devices move toward the use of our wireless networks or depend on cellular services. IT departments should be purchasing devices as they come out so that they can plan for network connectivity challenges.

**CT: Most colleges and universities have a mobile strategy. How do we create a wearable tech strategy?**

**Georgieva:** Higher ed institutions will need to think about their wearable strategy, but it has to extend beyond the obvious questions around privacy, content, network security. The more interesting areas will be to consider the potential applications and Web services that we offer on campus. Students will want to connect to, access, sync and use in new ways with their wearable devices. I don’t think we can “shoehorn” our current content into wearables. Wearables are a new cycle of technology that bring their own potential to be explored, and we need to focus on how it will shape the student experience.

We do not need to translate every single application into being accessible via wearable tech. Nobody will have the patience to browse through university Web sites on Google Glass or any of the other Glass- or watch-type devices. Think about having students walk with wearables through our buildings, using devices that are already charged with personal data and connect to an array of sensors. This opens completely new channels of communication.

It is no longer about one “killer app” but about all apps playing together to make the “ultimate student learning experience.” Today there is a lot written about BYOD, but soon we may refer to it as BYOE (bring your own everything) or, in the not-too-distant future (if I can coin a new acronym), BYOEB: bring your own enhanced body.

We will start with students on the digital edge, providing the opportunity to interact with information in limited ways — record and share a picture or video from Google Glass or a moment of the Narrative Clip stream; connect to social apps; participate in online sessions; or experience a simulation via Glass or a virtual reality device like the Oculus Rift. It will not be just making sure the content can flow through these devices, but focusing on creating interactions and fostering innovative student-learning experiences.

As [philosopher and media theorist] Marshall McLuhan said, “Each new technology is a reprogramming of our sensory life.” With wearables, we are about to open a new chapter on how we will learn and express ourselves in the future. **CT**

**Toni Fuhrman** is a writer and creative consultant based in Los Angeles.
IN THE PAST two years, Southern New Hampshire University has increased its online course offerings by 67 percent and more than tripled its enrollment, making it the fastest growing nonprofit online educator in the country. Just how has SNHU managed to create so many new programs and courses and hire enough instructors to deliver them?

Early on, administrators realized they needed a formal project management team for course development. With so many people and processes involved, recalled Kerri Bedrosian, director of eLearning project management for SNHU’s College of Online and Continuing Education, “We didn’t have anybody overseeing the entire process to make sure courses were ready when students needed them. We just kind of hoped they would be ready.” Bedrosian presented on SNHU’s course development journey this past July at the Campus Technology 2014 annual conference in Boston.

Streamlined Course Development
Now, Bedrosian characterizes SNHU’s course development model as “one-to-many.”

“We have an internal team that designs the course, from the outcome to the critical path for summative assessment, all the formative assessment around it, choosing the learning resource, text or e-text, discussions and lectures or overviews,” she said. “All that is designed in-house and built by our production team into Blackboard, our LMS. That becomes our one course model — our master course — and we then copy that out depending on how many sections are needed for that term. The instructor receives a fully completed course. It is great for us because we can ensure a lot of consistency across our sections.”

In addition to new courses in development, SNHU has about 1,000 existing courses in its catalog, which often need to be refreshed. “We have a process to decide which courses get redeveloped and refreshed every term,” Bedrosian explained. “It might be because we want to get a less expensive resource or there is new technology for graphic design or other programs.”

SNHU will work on 27 new or completely revised programs as well as 40 concentrations launching in the next year. “That means we will have 400 new courses in the next year and 250 scheduled revisions for existing courses, which means we will have 650 projects or courses to develop,” she said. “Break that down over our 11 terms and it means we have 60 projects we are launching each term.”
An academic team and marketing executives decide which programs they want to launch in the next year. Then for each program, SNHU holds a two- to three-day workshop in which subject-matter experts, academic stakeholders and a launch team figure out the curriculum (including number and type of courses) for that program. Once the program is approved by the university’s governing body, the project management team begins scheduling course development work.

At the same time that curriculum development work begins, course titles and descriptions are given to faculty recruiting teams, which look for instructors academically qualified and interested in teaching the sections, explained Libby Hayward, assistant e-learning project manager. Meanwhile, outcomes and assessment specialists work with the subject-matter experts to take the information approved at the program level and write outcomes for the end of the course and critical tasks for final assessments.

Meanwhile, a design phase begins. The instructional design team works with subject-matter experts to build the course and identify third-party resources such as videos, textbooks and e-texts. (SNHU has 10 instructional designers on staff as well as a network of freelance designers it can turn to as needed, Bedrosian said.) Each dean has a framework for how the design will proceed and the vehicles students will be assessed with. The courses are then approved and loaded into Blackboard. Three weeks before the courses begin, the instructors get access to the material in order to get acquainted with what they will be teaching.

Tackling Project Management
SNHU’s rapid growth brought so many stakeholders into the mix that people involved in the process didn’t always know where their courses were and what they should be doing next, Bedrosian recalled.

“Because we are growing so quickly we have run into some challenges,” Hayward said. “One is multiple, static spreadsheets. For tracking information on projects, I have three or four Excel spreadsheets open on my desktop, and I am sure others at Southern New Hampshire would say the same thing.” Without a live look into what is going on, information can be inconsistent or lost, she said, adding, “The other problem is that decisions get made via e-mail and if you are not in that e-mail chain, you might not get that information at all.”

To clear up the confusion, SNHU created a curriculum team structure. Deans lead curriculum teams that include a project manager, content architect and learning resource manager. “Instead of one group doing their part and handing a project off, the team stays together and there is more cohesion, so conversations keep going,” Hayward said.

“Once we broke it down to these curricular teams, we had to make sure they were operating on the same framework across the entire academic team. We wanted a central repository so there is always one place where the information lives and is always correct.”

The project management team looked at a variety of workflow software solutions, said Nicholas Brattan, assistant e-learning project manager. “Higher education has some unique processes and a lot of workflow software isn’t particularly attuned to higher education,” he said, noting that some
solutions looked too complicated for users to learn.

Ultimately the team chose a solution called Comindware, which allows for centralization of information. That's vital for a few reasons, he said: Previously, if an individual wanted to look at a project, he or she used to have to go to one place to look at learning resources, another place to look at governance information, another place to look at who was assigned to the project. “At the rate we are growing, that is not sustainable,” Brattan said. “Comindware gives us a central repository where all the conversations around a project are going on. We want users to log in to the system and see a list of every task they need to do for that project.”

Bedrosian said the transparency of internal processes would be key to keeping up with all the growth. Both new and existing employees see an overview of the process from start to finish, she noted. “We want to let them see where a course is in the cycle so it gives them insight into where they become involved.”

Plus, when creative staffers (such as multimedia teams) have visibility into what projects are developing, they can begin looking for resources earlier in the process. “As soon as we have a course specification document, they can start looking for an interactive video or simulation,” Bedrosian explained. “We weren’t able to do that before.”

For each program, SNHU holds a two- to three-day workshop in which subject-matter experts, academic stakeholders and a launch team figure out the curriculum.

David Raths is a freelance writer based in Philadelphia.
Hiring in Higher Education IT

Campus information technology departments are looking for candidates with skill sets in mobile, big data and more — but will the best talent be lost to the corporate sector?

WITH CLOUD COMPUTING, mobile technology and big data analytics on the rise, a lot of change is coming to campus IT departments. And along with all that change comes the need for many colleges and universities to ramp up their IT hiring in 2015.

That is both good news and bad news. It’s great for job seekers, of course, when organizations increase head count. But for higher education institutions — not known for their top IT salaries — competition with the corporate sector should be tough. Smaller schools will have the hardest time of it, potentially losing desired candidates to larger schools in their area. How well a school can compete will depend a lot on school mission; employees’ access to cutting-edge technology; and creative benefit offerings.

Casting a Wider Net

Deborah Scott is already feeling the recruiting pain. As chief information officer at the small but leading-edge Worcester Polytechnic Institute in Worcester, MA, Scott is searching much farther afield for desired top talent.

Worcester Polytechnic is located in the third largest city in Massachusetts, approximately one hour west of Boston. There are a number of other colleges and universities in the area competing for the same talent pool, which is to be expected. But coming as a surprise this year has been growing competition from employers in neighboring Connecticut and Rhode Island.

“I’m finding that IT professionals are in really high demand across all industries, and it seems to be from Boston all the way through Central Massachusetts,” Scott noted. “I have even heard that there is negative unemployment for IT professionals, meaning that there are more open IT positions than there are IT professionals to fill them. We are finding that we are having a hard time recruiting because of that.”

Another challenge is the caliber of IT pro needed.
technology experience.

“We have new graduate programs in data analytics, a new cybersecurity program and an active and growing robotics program,” Scott said. “Those types of research areas are really driving the demand for us to have some of the multi-disciplinary, scientific-oriented IT people that come with a breadth of skills in programming and systems integration.”

That combination alone makes candidates hard to come by, especially competing with Eastern Massachusetts, one of the top tech centers in the country. But one thing in Scott’s favor is the work itself.

“It is always more interesting to be at an institution where you are working to solve some leading and real-world problems. The people who come here are more interested in that than they would be in a cookie-cutter corporate environment,” Scott said.

There is good news for traditional IT job candidates as well, whether they work in tech support, networking or systems administration. Scott is also always doing some level of replacement hiring.

“Since we are a relatively small private school, centralized IT is everything to everyone,” Scott explained. Out of a staff of 70, she said, “About half of my division deals with the IT infrastructure and back-end computing. The other half deals with directly supporting the delivery of the academic mission — whether that is supporting the faculty, the students doing research or in the teaching in the classroom or online learning space.”

Another staffing advantage for Worcester Polytechnic is its own information technology academic program, providing a steady source of raw talent right on campus.

“One of our saving graces is that we have a lot of really great students here who can work for us to fill the gap,” Scott noted. Still, that is a temporary fix: “Computer science students are the most in demand of any major here, so we do lose them back out to industry,” she acknowledged.

The Best of Times, the Worst of Times
The growing competition for IT professionals is confirmed by Jack Cullen, president of the IT staffing firm Modis, which just recently published its 2015 Salary Guide.

“Based on conversations that we’ve had with CIOs, technical hiring managers and IT directors, we feel that 2015 will be a strong year for IT hiring,” Cullen predicted.

That is bad news for CIOs in higher education, who must face even greater competition for talent. It also means higher salaries are on the horizon as that competition heats up — and the corporate sector can react more quickly.

While Cullen expects IT salaries to increase by just under 5 percent on average, some high-demand IT jobs will go up considerably more. “Take database analysts. We’re seeing a lot of need for strong analysts, data warehouse managers, the people involved in big data. There is a particular need for folks who have complex analytical skills and high-level enterprise architect skills — we’re looking at a 10, 11, 12 percent jump in wages for them,” he said.

“Other areas where I think we’re going to continue to see top wages paid are network security and mobility. Again, they’re so much in demand and they’re so hard to find that companies are really going to have to pay for them,” Cullen added. Big data, security and networking are all areas that campus recruiters will be targeting heavily.

Salary Challenges
None of this is good news for Lynn University in Boca Raton, FL, which is already challenged with IT recruiting. The small private institution has approximately 2,500 students overall, including its graduate and online program.

“IT-wise, we are just shy of 25,” said CIO Christian Boniforti. That includes IT support services, systems administration, network management and telecommunications. “Not included in that 25, but as part of my CIO responsibilities, are the library as well as our campus card office and institutional research. Once you add those non-traditional IT functions we’re close to 40.”

South Florida overall is “not necessarily hopping with technology-driven industries, but we do have a pretty large and pretty technology-savvy area around Miami,” Boni-
to support the individual device, to how does it impact software development, to how does it impact systems, and how does it feed out to the actual students and faculty.”

Like with Worcester Polytechnic’s Scott, recruiting is already challenging enough for Boniforti. Next year only promises to bring more headaches.

“I definitely look for individuals who have the ability to carry on a conversation with the end user. That is really important to us: the ability to converse, the ability to speak outside of technology.”

— Christian Boniforti, Lynn University

Looking Ahead
As to overall hiring needs, soon Boniforti and staff will begin the annual budget review process and annual staff reviews.

“Early indications are that we will be looking for another full-time employee or two in the support services area and another one in the CRM world,” Boniforti said. “We’re looking to begin implementing a customer relationship management system across the campus, to be more effective in the way that we communicate with our current students, faculty and staff.”

Most importantly, Lynn University needs more mobile technology professionals. “On our campus we have a 1-to-1 iPad initiative that we launched last year, and we’re giving out an iPad to every student on campus,” Boniforti said. “There’s a whole movement to mobility that has really caught fire on campus here. We’ve transitioned one of our Web developers from a traditional .NET developer to an iOS and HTML5 developer.”

Still, Boniforti explained, “We’re needing more resources. Mobility ranges the entire spectrum of IT, from having
user,” said Boniforti. “That is really important to us: the ability to converse, the ability to speak outside of technology. And being a good listener is really important.”

Finding job candidates who can be checked off in all the desired categories — technical prowess, business understanding, soft skills and communication skills mastery — is asking a lot. And it may account for much of the recruiting struggle that campus recruiters face.

Boniforti’s advice to the job candidate: “For us, flexibility — or the ability to adapt — is really important; to be able to show that, not only on a résumé, but in person. Also, be able to give examples of how you were challenged, how you tackled a new endeavor, made it your own and really shined.”

Further, the ability to demonstrate soft skills in an interview is critically important, Boniforti said. That includes the ability to sit and make eye contact, to listen and to speak adequately and very intentionally.

“Obviously keeping up with the technologies and things that are happening” are a given, Boniforti said. That includes having an understanding of how the cloud and mobility are shaping technology: “How [the candidate] may be able to be connected to those things would be something I would be looking out for.”

Finally, Boniforti agreed with Scott that big data will be a major driving force in campus IT hiring in 2015.

“That another thing that is really becoming more important is the data piece: the people who are able to analyze data; more of a science, math, technology sort of combination. I believe those kinds of people in 2015 are going to be in high demand and we’re not going to have enough of them,” Boniforti concluded. CT

David Weldon is a freelance education and technology writer in the Greater Boston area.
Flipping the Lecture Hall
Columbia University is experimenting with the flipped classroom model in large lecture courses.

THERE’S NO QUESTION that the flipped classroom model has become all the rage at colleges and universities across the country. In fact, in the most recent Horizon Report, the New Media Consortium (NMC) called the flipped classroom one of the most important emerging trends in educational technology for higher education, noting, “The model is becoming increasingly popular in higher education institutions because of how it rearranges face-to-face instruction for professors and students, creating a more efficient and enriching use of class time.”

Yet with all the flipped classroom’s potential for active, collaborative learning and increased interaction between professors and students, there’s still one bastion of higher education that has resisted the trend: the large lecture course.

With the large lecture format, said NMC Senior Communications Director Samantha Becker, “it’s really hard to personalize the material so that a student can feel like they have ownership over their own learning process.” And, she added, “It’s hard to speak up. There’s always the fear of being ostracized by other students or feeling like asking stupid questions.”

Maurice Matiz, executive director of Columbia University’s (NY) Columbia Center for New Media Teaching and Learning, agreed: “Sitting in one of these 180-student classrooms is a very passive situation,” he said. “We’ve found that students aren’t really learning very much.”

Matiz and his colleagues are out to change that — by finding ways to adopt the flipped classroom model in traditional large lecture courses.

The Big Flip
They started last year with associate professor Brent Stockwell’s biochemistry class of 180 students. Stockwell was discouraged by the number of students who were not completing the required reading assignments before coming to class and, thus, were unprepared to get the most out of his lectures.

So, in the fall 2013 semester, he began creating weekly slide presentations using PowerPoint and the screen-recording application ScreenFlow. He would upload the videos to YouTube, then embed them into the syllabus section of the online learning management system and invite students to watch. Stockwell also placed a link to a short quiz underneath the video player on the syllabus page. Since the quiz results counted toward students’ grades, he was assured that most students would watch the video and come to the following day’s class prepared.
“[The quiz] is something we learned to do with our MOOCs, and then applied to what we do on campus,” said Matiz, who helped Stockwell organize the flipped class.

The flipped format allowed Stockwell to delve deeper and in new directions with the live content he presented in class. He also incorporated a polling service called Socrative that students could access on their mobile devices. Students could respond to questions anonymously in real time, giving him a sense of whether they understood the concepts presented to them, allowing him to revisit a difficult topic or move on to other material.

Then he divided the class of 180 into groups of five and, for part of each class, he would give them problems to work on together, such as how a specific fatty acid should be labeled or how to predict the mechanism of an action of a drug based on the results of an experiment. The group work led to livelier discussions and forced students to synthesize and apply information from the textbook, videos and classroom discussion.

“What I particularly appreciated about professor Stockwell is the way he wove all the different components together,” NMC’s Becker said. “He countered the size of the class by grouping people together and allowing for anonymous polling through the response feature.”

Deciding to try an even larger class, Matiz moved on to professor Rachel Gordon’s Body, Health and Disease class of 250 in Columbia’s College of Physicians and Surgeons. Gordon also used short video lectures students could view before class, reserving class time for discussions of case studies with an audience response system. She would poll students after covering a concept and, if less than 50 percent of students chose correct answers, she would ask them to break into small groups to discuss their choices.

Typically, she said, the peer discussions would lead to increases in accuracy when students were polled a second time.

“On many levels it was more satisfying than lecturing, where you don’t really know if the students are ‘getting it,’” Gordon said. “I hope that more teachers will take the plunge. It’s worth it.”

Challenges
One challenge that Matiz and Stockwell encountered with applying the flipped classroom model to large courses: the physical limitations of spaces that are not inherently designed for small group work.

“This is an old university,” Matiz said, “over 250 years old. A lot of the classrooms are traditional classrooms. Many of them even still have desks that are bolted to the floor.” Nevertheless, Stockwell made it work. “If you’re willing to deal with those issues, you can still do it,” Matiz said.

Fortunately for Gordon, the Columbia medical school has a relatively new campus and entire sets of classrooms that were built with collaboration in mind.

Stockwell also noted that the biggest challenge he had in the first year was running out of difficult, thought-provoking problems and case studies to give his students when they broke up into small groups. To resolve that challenge in this, his second year of using the flipped classroom model with the biochemistry course, he has called on other biochemistry professors in the New York area to build a repository of problem sets that can be shared.

Despite the difficulties, Matiz said, the command of material by students during and at the end of the course was so obvious to Stockwell and Gordon that they are convinced of the benefits of the flipped classroom in college and university courses.

“There are so many advantages,” Matiz said. “The course really becomes just for the student.”

NMC’s Becker agreed, adding, “The flipped classroom is less of a technology and more of a digital strategy that’s enabled by technology. It’s really a pedagogical movement that’s incorporating a lot of 21st-century learning techniques.”

Michael Hart is a Los Angeles-based freelance writer and the former executive editor of THE Journal.
How Will Campus Networks Handle the Internet of Things’ 26 Billion Devices?

The exponential growth of the Internet of Things will challenge college and university wireless networks with large quantities of data, security concerns, bandwidth demands and more.

THE “INTERNET OF THINGS” (IoT), the network of devices with embedded sensors and wireless technology, is already present on most college campuses in the form of security cameras, HVAC controls, building access, lights, power and more. But predictions call for an explosion in the number of IoT devices in the near future, and campus IT departments are already bracing for the impact on their wireless infrastructures.

According to a Gartner study published in December of last year, the Internet of Things will grow to 26 billion units installed by 2020, representing a 30-fold increase from 900 million units in 2009. The IoT is expanding at a much faster rate than that of PCs, tablets and smartphones, which are expected to number 7.3 billion units by 2020.

“The enormous number of devices, coupled with the sheer volume, velocity and structure of IoT data, creates challenges, particularly in the areas of security, data, storage management, servers and the data center network,” said Joe Skorupa, a vice president and analyst at Gartner.

The IoT connects remote devices and provides a data stream between the devices and centralized management systems. Each device can provide information on its own status, location and functionality, and real-time information enables more accurate understanding of these things. “IoT deployments will generate large quantities of data that need to be processed and analyzed in real time,” noted Fabrizio Biscotti, research director at Gartner. “Processing large quantities of IoT data in real time will increase as a proportion of workloads at data centers, leaving providers facing new security, capacity and analytics challenges.”

“The IoT threatens to generate massive amounts of input data from sources that are globally distributed. Transferring the entirety of that data to a single location for processing will not be technically and economically feasible,” said Skorupa. “The recent trend to centralize applications...
to reduce costs and increase security is incompatible with
the IoT. Organizations will be forced to aggregate data in
multiple distributed mini data centers where initial pro-
cessing can occur. Relevant data will then be forwarded
to a central site for additional processing."

Gartner recommends a forward-looking capacity man-
agement approach that aligns IT and operational technol-
ogy standards and planning so as to be able to provide
data processing based on priorities and needs.

Security Concerns
If the explosion of devices and data isn’t alarming enough,
another study, this one published by HP in July, has found
that most IoT devices have exploitable security flaws.
Researchers reviewed devices in 10 of the most popular
IoT niches:

- TVs
- Webcams
- Thermostats
- Remote power outlets
- Sprinkler controls
- Hubs for controlling multiple devices
- Door locks
- Alarms
- Scales
- Garage door openers

All devices included mobile applications for remote access
or control. The study found that 80 percent of the devices,
along with their cloud and mobile-application components,
failed to require passwords of a "sufficient complexity and
length." Insufficient authentication/authorization leaves a
device vulnerable to access by hackers. And 70 percent of
the devices used unencrypted network services.

Bandwidth Demands and More
College and university IT departments have been dealing
with the ever-increasing wireless demands of end-user
devices for years, while facing budget restrictions and
even cutbacks. Could an explosion in the number of IoT
devices accessing institutional networks over the next few
years be the 26 billion straws that break the camel's back?

“Everyone wants to use the wireless network for everything
now,” said Mike Russell, assistant vice chancellor for enter-
prise services operations at the Virginia Community Col-
lege System. That includes end users’ mobile devices, but
also security cameras, HVAC controls, door locks, lighting
systems, clocks and more. Russell’s office assists a system
of 23 colleges, 40 campuses and 400,000 students, and
each of the colleges has its own wireless solution.

The Virginia Community College System faces 5 percent
budget cuts across the board this year, and 7 percent next
year, so keeping up with the ever-growing demand for
bandwidth is a challenge. The colleges don’t have the
money to replace their systems, so the focus is on expand-
ing what they have. Some colleges are still using first-
generation wireless networks that cannot support new
devices. And at some of the colleges, the wireless net-
works get overwhelmed at times and cease to work.

Expecting greater wireless demand and smaller budgets,
Russell said, “The colleges haven’t had to limit the usage
of certain devices, but they may have to in the future.”
Each college is required to have technical plans for the
future, and the CIOs of the colleges come together quar-
terly to discuss IT strategy and goals. Russell said that
“wireless capabilities, wireless access, new wireless
devices and BYOD consistently top the list of concerns.”

It’s a similar story at the Los Angeles Community Col-
lege District (CA), where, as CIO Jorge Mata told Cam-
panuence of Intellectual Property Rights, Without Further Notification or Permission. The Information and Articles Provided in This Document Are for Reference Only and Do Not Constitute any Statement of Fact.
pus Technology last year, bandwidth has had to grow by a factor of 2,000 over the previous 15 years to keep up with the demand, and the need for more capacity is actually accelerating. New construction now comes with “smart” installations that use the wireless network, such as building and inventory automation, security and access control, and power. “We’re building ‘smart’ everything,” Mata said. “What that means is it uses more bandwidth.”

Mata’s strategies for dealing with increasing wireless demands include bandwidth control such as caching and rate limiting; building a calendar to estimate how much bandwidth new initiatives might require; and staying on top of those new initiatives by paying attention to strategic plans across departments. He looks at board agendas and contracts that are in the works, monitors Web usage data for each of the colleges and stays in touch with college IT managers. Staying ahead of bandwidth demand is “part science, part art, part politics,” he said.

But Deke Kassabian, senior information technology director, information systems and computing, University of Pennsylvania, is not very worried about bandwidth when it comes to IoT devices. IoT devices at Penn currently number in the hundreds, but that number could be tens of thousands in the near future. Even at that rate, however, Kassabian said such devices will not affect bandwidth as much as the still increasing demands of end-user devices. He said, “The challenges in integrating these devices have more to do with granting them appropriate access to networks, and limiting access by others, than concerns about bandwidth. Another possible challenge involves the sheer number that might eventually be in use and the resulting impact on network address space.”

Traditional access control approaches on college campuses often can’t easily authenticate IoT devices. “Access control mechanisms commonly used on campus, such as username and password authentication to WiFi networks, do not apply for these devices in a very natural way,” said Kassabian. So currently, his institution has “assigned what look like user credentials to devices,” but he said this is a short-term, suboptimal solution. For the future, he is looking at the installation of a client side certificate.

Kassabian pointed out that thousands of devices per building in the near future “would take a big bite out of [IP] address space, and even non-routable addresses could feel the strain.” But as he noted, this problem should eventually take care of itself with the transition from IPv4 (Internet Protocol version 4) to IPv6, an upgrade driven primarily by limited address space in the first place.

Penn’s Information Systems and Computing group has published its strategies for wireless networks on the Web, which include continuing investigation into new wireless technologies and working with other departments to consult on new installations of IoT devices. IT also recommends to “hardwire [IoT] devices first when and wherever possible,” meaning when it’s both economically and technologically possible.

The Internet of Things is here to stay, and it is about to grow into a far bigger and hungrier creature. The best way to feed it is to plan ahead rather than try to handle it after the fact. Of course, you don’t have to feed it. The coming flood of IoT-capable products is due to the low cost of adding IoT capability to products rather than a demand for it, and Gartner predicts that “ghost” devices, IoT devices whose connectivity goes unused, will be common. In other words, just because your janitorial department buys a fleet of vacuum cleaners with IoT capability doesn’t mean you have to actually use that capability.
THINK BACK TO 2012: Massive open online courses were at the top of the hype cycle, threatening to completely disrupt higher education. A new world of digital textbooks was beginning to take shape. Colleges and universities grappled with trends like badges, social media, mobile technology and more. And the stakes were high — that same year, University of Virginia President Teresa Sullivan was dismissed and then reinstated in a controversy largely over whether the university was moving fast enough to respond to the online education movement.

Taking a page from the corporate playbook, some universities are creating a new C-level title focused on moving the academy into the digital age. Will the CDO be a strategic advantage or an organizational name game that dilutes IT’s role in institutional leadership? BY DAVID RATHS
At the core of all that disruption is the need for a digital strategy in higher education. In fact, some institutions have started establishing chief digital officer (CDO) positions to create a structure and accountability on campus around both online learning and the university’s overall digital presence. It’s a trend that has taken an even greater hold in the corporate sector: According to a 2013 McKinsey survey of C-level executives across a range of industries, regions and company sizes, 30 percent reported a CDO on their companies’ leadership teams. And, according to the study, “In a sign that this new role is already creating value, respondents whose organizations have a CDO also indicate significantly more progress toward their digital vision than those without one.”

Campus Technology asked a group of five higher ed IT leaders, some with digital in their title and some not, to discuss the pros and cons of creating a new C-level title around digital in higher education—and to prognosticate about whether the title will have staying power.

**CT:** Why are university presidents and boards creating chief digital officer positions?

**Voss:** My view is that the vast majority of universities have still not embraced IT. Along comes 2012 and the rise of MOOCs and the unfortunate incident at the University of Virginia, and everybody said, “Oh my god, there is a storm in the gulf.” The presidents are just not finding a structure in place to make this rapid advance that the administration rightfully feels needs to happen to the academy. The provost may not be prepared to lead on this, and perhaps the CIO has not been engaged or in some cases has been told not to be. Administrations want someone to be in charge.

**Sreenivasan:** We are at an important moment of change in society, education and technology, and the chief digital officer’s role is something that is ideal for this particular, unusual moment. Every senior executive in higher education needs someone at their right hand who can guide them about using digital technology to amplify, optimize and enhance the work they are doing. This is the right time for that. In a few years, you won’t need that because the chief operating officials will already have that knowledge.

**Wheeler:** I think some of this stems from a lack of confidence in the CIO role and who is in that position. To the extent the academy — the provost, deans and faculty — can trust that person, then they can see things coming together in online learning, electronic recruiting of students, etc. To
the extent that they don’t, they feel they need to hold it more tightly. But it still has to have some kind of administrative structure, so they create these “vice provost of digital stuff” positions. When people create a position like this or play organizational box chart matrix and move stuff around, it often has very modest impact in the end, because they are not solving the core issue of how organizations evolve — through influence, trust, action and cohesive strategy.

CT: Ron, why did Notre Dame add “digital” to your title of CIO?

Kraemer: I think it was a clarification, a way of clearly establishing with other vice presidents that this was my role. Part of the reason Father John [the Rev. John Jenkins, Notre Dame’s president] wanted the chief digital officer to also be CIO is that he believes the CIO has a perspective across the institution. The network, data centers, etc., are part of my portfolio, enabling these different areas involving teaching and learning and research. But it will be different on every campus depending on the unique circumstances of that campus. Some chief digital officer roles are showing up in CIO offices. Some are showing up in marketing and communications.

CT: Elliott, what did you think when you were approached to become chief academic digital officer at Notre Dame?

Visconsi: I was very excited. It is a new role. There is a clear remit from the academic side to articulate a digital strategy from within the academic domain and then broaden that out to partner with the whole university in a public context. I have a background in teaching English as well as First Amendment law in the digital age. I also have started a software company. Understanding entrepreneurship in the technology space was really great training for taking this position. It touches all corners of the university. We will partner with faculty members to create an online graduate certificate series, for instance, or a flipped classroom model for Introduction to Biology.

CT: What is the potential impact of creating these positions on the overall IT picture and the role of the CIO?

Sreenivasan: At Columbia I worked very closely with the CIO Candace Fleming and her team. We had a wonderful understanding. Her job is the much more complicated, high-pressure, profit-and-loss job, whereas the chief digital officer is more focused on strategy. The CIO and CDO have to be connected at the hip.

Voss: I thinking creating these positions is diluting the role IT plays broadly across the institution. If you make your CIO responsible for the network, ERP, security and those things, that starts to feel very facility-ish. And then you create this chief digital officer focusing on the academy, mostly teaching and learning, and if you are a research university there may be another person in charge of research IT. You may end up with three different people trying to guide the IT strategy of an institution. It gets diluted. You are not going to have three chief IT officers in cabinet meetings. I believe universities should look carefully at where they are with their technology efforts and what role is most important to them — and that is the role that the CIO should play.

Wheeler: I agree with Brian. Over 10 years ago Mary Ann Broadbent [and Ellen Kitzis] wrote a book called The New CIO Leader, which made the point that the CIO role is not stagnant. It is either becoming more valuable to the institution every day or it is becoming less valuable in terms of just running infrastructure and plumbing. For universities our core business of research and education is becoming more technologically intensive. Do you put the CIO in charge of plumbing, then turn to a new chief officer of digital stuff to handle the parts around teaching and learning and research technologies? That is a tension you see now. In the late 1980s and early 1990s, many colleges went through the first big move of merging academic and administrative computing. That was a big deal, putting those under a common organization. Now you see, almost by accident more than on purpose, some institutions re-creating that segmentation.
CT: Ron and Elliott, how are you two working together in these roles at Notre Dame?

Kraemer: Considering the pace of change we are faced with, it is always going to be an evolving platform. Elliott and I just look at it as natural for us to collaborate as things change at the speed of light, and the fact that we have the titles we have says something to the rest of the university. But we find the collaboration to be a natural part of what we do.

Visconsi: Not everybody in Ron’s role would have the same appetite for getting involved as deeply in the teaching and learning work. I think that is a wonderful feature of our current setup and Ron’s leadership. I think we are all working together to give students, faculty and staff the best experience we can. It is not just hype.

CT: Could those relationships between chief digital officers and CIOs be difficult to navigate?

Voss: Yes, because you have a lot of the same technologies and vendors and licensing issues that are interrelated, but if you try to parse it out and say this person is going to be in charge of issues as it relates to pedagogy and this person as it relates to research and this person as it relates to pervasive or administrative uses, then you are going to end up with what we had before we had CIOs.

CT: Could one outcome of the creation of these roles be a broadening of the pipeline into the CIO position to include more people from an academic background?

Wheeler: That is a double-edged sword. First off, not every good football player makes a good coach. Not every good coach makes a good TV commentator. On the positive side, however, I am a fully tenured professor and came up through the ranks. It does allow me to engage with faculty colleagues, and I come into the conversation with some degree of respect. Other CIOs may face resistance, not so much on the merits of the debate, but framed as the academy vs. the staff. It is a delicate point. But if you pull more faculty members into the CIO role, they must understand what the role is, in terms of how you manage uncertainty and ambiguity, lead people and build a healthy organization. I am a little biased. I think folks from a business school background have a broader preparation for that than other disciplines that don’t study economics or organizational health.

Voss: Too often people who are CIOs or who have been put into the pipeline to be CIOs are not well equipped to deal with these issues, or are perceived as not well equipped. And sometimes elements within the academy bristle at the idea of an administrative type having much to say about the way teaching is done. We need to broaden the pipeline coming in. When I think of colleagues in the IT community — the ones I put at the Peyton Manning, Tom Brady, Drew Brees level — they are members of the academy, people who make a conscious decision to broaden their background. You can’t do the job if you don’t have an experience of the organization.

CT: Sree, what are some things you focused on during your time as chief digital officer at Columbia?

Sreenivasan: Because we weren’t trying to set the standards as some of the other universities were in the kinds of technology used to share with the world, we were able to cherry-pick from the different offerings and try them. That made sense for Columbia at that moment. At the time all the hype was about MOOCs, and we were experimenting with that. But we were doing a lot of things in individual courses and not MOOC-related. There is a lot to be gained in optimizing courses for the way people learn. To me, the digital classroom is comfortable in Google Docs. That makes it a digital place. I remember when I first used Google Docs I could see it was going to change my life as a faculty member. We used to e-mail back and forth with students. After you start using Google Docs, your e-mail box dries up in front of you. It is an amazing thing. Technology doesn’t have
to be this big, complicated $100 million project. Sometimes it is as simple as Google Docs.

CT: Have you studied what chief digital officers are doing at other universities or do you look outside higher education for inspiration and ideas?

Sreenivasan: The first person I called when I was contemplating taking the CDO job at Columbia was Perry Hewitt, chief digital officer at Harvard [MA], but her role is different. I was situated in the provost’s office working on the academic side while she is focused on getting the entire university, not just the academics, much more digitally savvy. That is an amazing opportunity at Harvard. There are some fantastic people doing pioneering work on distance education, but I also look at companies in other industries, such as Disney. There is a Chief Digital Officer Summit that brings people together from many sectors to share ideas.

Visconsi: I have been looking at areas of the private sector interested in educational technology, and in particular the venture capital/private equity world, as well as education services companies, both as vendors and to understand their strategies. So I have been casting a pretty broad net looking at what companies such as Pearson and Wiley are doing. I wouldn’t say I have one model of a university that seems especially compelling. Certainly we joined the edX Consortium because we saw in edX a partner and a group of university members who shared our vision about creating great teaching and learning courseware, enriching the world and researching what works in the context of a nonprofit company that nonetheless runs like a business. It resonated strongly with us.

CT: Do you think these chief digital officer titles will proliferate or fade away?

Kraemer: I am not a good predictor of the future, but I am going to be fascinated to see whether this title holds or morphs into something else. The responsibility will hold. In this personalized, individualized, consumer-oriented kind of world, this is going to be very important work. I just don’t know how it is going to be titled. Progress won’t be measured by the number of universities that start putting ‘digital’ in titles of people.

Visconsi: The responsibilities of what are now vice provosts for digital learning, chief academic digital officers or chief digital officers are going to become more prominent. It will be essential for any university to have senior leadership that has a deep sense of both the way the on-campus and extra-campus environments operate. You can’t just build a wall around your campus and say we are going to build great digital stuff here without understanding the broader ecosystem of vendor relationships, where the market is and what the higher education landscape is like in this area.

Sreenivasan: I used to joke that a chief digital officer is the equivalent to being a chief telephone officer when the phone was first introduced. People wanted to understand the strategy behind it, how to implement it and how to use it. They

“In this personalized, individualized, consumer-oriented kind of world, this is going to be very important work. I just don’t know how it is going to be titled. Progress won’t be measured by the number of universities that start putting ‘digital’ in titles of people.”

— Ron Kraemer, University of Notre Dame
wondered if it would disrupt their life. Eventually everyone figured out how to use a phone and it became part of the workflow. There is a chance that will happen with this and you won’t need a chief digital officer anymore. Everybody in the building will be a digital officer, so the CEO will be the chief digital officer. You’ll have people who really understand this well and they will graduate into those top jobs.

**CT:** Are there some lessons higher education can learn from the experience of other industries?

**Wheeler:** From 1996 to 2000, there was an upheaval when online shopping and e-commerce started to have an impact. Companies that had long succeeded in the physical world just didn’t know what to do in the digital world. When I spoke to companies and boards about the concept of e-commerce, I told them it is best understood if the “e” is silent — because this is core to the business, not a bolt-on.

Companies that did bolt-on activities and created separate organizations to cause it to move forward — every one of those approaches flamed out. Even if they learned how to do something, they couldn’t assimilate it back into the organization. The firms that learned to take what they did well and transfer it into a digital world fared far better than those that tried to pretend their culture didn’t have to evolve. I see the same mistakes being repeated right now in higher education. If folks try to create separate online organizations rather than ingraining it in what they do, those efforts are going to have a modest impact on the academy over time and just dilute the role of the CIO and make it harder to recruit and retain someone of great talent to that role. **CT**

David Raths is a freelance writer based in Philadelphia.
Using Video Grading to Help Students Succeed
Creating videos to supplement the grading process can personalize the instructor-student relationship, clarify expectations and help keep learners on track.

IN MY SEVEN years at the helm of the fully online Master of Education program in Instructional Design & Technology at West Texas A&M University, I have never found an admissions tool that reliably separates good prospective students from those who will likely fail. Undergraduate GPA, entrance interviews, entrance essays, standardized test scores all have done an abysmal job of predicting success in my program. A student with a 2.3 undergraduate GPA is probably going to struggle and one with a 3.75 is highly likely to soar like an eagle, but for the Great Middle with their 2.65 to 3.25 GPAs, anything is possible—from All-Star status to immediately assuming fetal position in the face of our workload.

How do we work with this “high-risk pool” to maximize their chances of success? Setting crystal-clear expectations in the Program Handbook clearly helps. I have also been known to read the riot act to marginal prospects on the phone prior to saying “yes” to admission: “Fred, the success rate for people who have shown up on my doorstep with General Studies diplomas, 2.4 undergrad GPAs and fuzzy career goals has really stunk. If you are not going to join them on the scrap heap, here is exactly what I am going to expect from you from Day One.…”

But beyond these obvious strategies, one invaluable technique that is rarely employed to help push students in the right direction is the use of instructor-created videos to supplement the grading process.

How It Works
The grades for all my courses are the average of the mid-term project and the final project, provided the nongraded weekly class assignments have been submitted on time and are acceptable. The moment of truth is often the evaluation of the midterm project of the first technical course. If a student’s performance is so promising that I am convinced that written comments are all that is needed to elic-
it the next level of excellence, that is what he or she gets along with the letter grade. On those very rare occasions where performance is so horrific that it is immediately clear beyond a reasonable doubt that the student is not going to profit from continuing the program, I do not hesitate to counsel the student in the direction of the exit ramp.

For those in between, I respond to their projects with an e-mail that provides access to a grading movie of some three to seven minutes, which I create with TechSmith’s Camtasia software. The visual focus of this movie is the project they turned in, with me using Camtasia’s wonderful toolset to zoom in on details and highlight issues. For example, I will often draw straight lines on students’ Web page designs to show how the alignment of objects could be improved. The audio track features me giving them exactly the same critique of their work that they would receive if they were standing over my shoulder looking at the screen during a one-on-one visit.

3 Benefits of Project Evaluation Movies

Making it personal. My students often come from “bad academic homes.” They have had some professors in the past who were more tied up with presenting at conferences and generating publications than with making a genuine connection with students. Students have too often seen e-mail notices informing them that Dr. Shmow will be traveling for the next five days on important business and will be responding to their e-mails sometime after she returns. They have had their papers rated by equally distracted graduate assistants, often with marginal English language skills and little understanding of the real concerns of the people behind the papers.

Granted, these students have become very goal-oriented about jumping through the necessary hoops to get a graduate degree, and have learned not to care about institutions that they believe don’t care much about them. They may have even chosen a program that was online because they are not confident in their abilities, and they hope to slip more easily under the radar in the distance learning environment.

The first time such students get a personalized movie critiquing their work, they are dumbfounded by the realization that this particular professor is not just “talking the talk” of student engagement, but “walking the walk” as well. I have gotten post-critique e-mails that were close to tearful in gratitude, even when the list of items to be improved in the student’s work was considerable. This can create an instant sea change in the student/teacher relationship, and a heartfelt commitment not to let this guy down.

Demonstrating fairness and limiting grade appeals. Another aspect of those “bad academic homes” is that many marginal students have been the victims of some genuinely uncaring and sometimes unfair grading. No human activity is completely guided by rationality, and grading student work is certainly no exception. The widespread mythology that the now-omnipresent grading rubric eliminates or even seriously constrains the irrational component is nonsense, since rubrics themselves are often entirely open to interpretation. No honest instructor can deny the possibility that, despite his best intentions, the way he grades a project might be influenced by what kind of experience he had with the last person in his class named Terrence, Tammy, Taiko or Takeisha. The unconscious simply cannot be willed out of existence. Nor should we discount the effects of mood, weather, biorhythms or the quality of today’s lunch on the grading process.

This very week, we had a brief computer network meltdown at my university, which resulted in me grading the same piece of student work twice without realizing it. The mature student was amused to get two grade explanation e-mails from me that week, one justifying the grade of A in careful detail and another doing exactly the same for the grade of B. On rereading both, I still think I was right both times! (She kept the A.) While high-quality students shrug off the occasional odd grading decision the way a batting champion refrains from arguing an occasional strike called by an umpire on a pitch out of the zone, marginal students can easily become obsessed with a sense of persecution...
ASSESSMENT

by what they see as a pattern of unfair or incompetent grading that resonates with their past experiences.

Grading movies greatly reduce this problem in two ways. Because the video meticulously documents exactly how the professor arrived at the grade, the student is forced to drop any illusions of arbitrary or capricious treatment. More important, by forcing the grader to justify all his opinions about the work with visual evidence, the grading itself becomes more fair and reasonable. At least 20 percent of the time, I change the grade that I would have given a project during or after making a grading movie. I have learned not to start the movie by telling the students their grade, because I have had to go back and edit that part of the sound track too many times.

Removing all doubt about expectations. The projects that receive grades of C, D and F typically fall into two categories. There are a few students who know perfectly well that they are turning in garbage, but are hoping that I am too lazy or blissed out to inconvenience both of us with a bad grade. Maybe they think the real grading scale is A=Average, B=Below Average, C=Comatose and D=Dead. Or maybe they have had the experience of teaching assistants so terrified of retribution on the dreaded student evaluations that they are afraid to give any work a grade less than B, even if it is unfit to line the birdcage. I have also run into a few students who are convinced that their grades have little or nothing to do with their work, but are simply a measure of their success in relationship-building with their professor. In many of these instances, a grading movie that just sends the message “There is a new sheriff in town, and he really cares about the quality of your stuff” is all that is needed.

Most students are sincerely shocked when they get a poor grade on that first project. They have been accustomed to the subtle discrimination of low expectations and are “blindsided” by realistic ones. Often, they sincerely believe that if they have made a minimal pass at some of the items on the list of Required Project Specifications, they have done the job well and earned the best possible grade. Just yesterday, I graded a graduate midterm project which was a presentation manual created in Adobe InDesign, intended for teaching a technical topic in a community college. The student, whose native language was English and who holds a rather prestigious job with a local health maintenance organization, had 28 spelling and grammar errors in the first 5 1/2 pages of the work. This student clearly did not understand that written expression mattered in this project, even if the course goals were predominantly technical. She certainly understood it when she saw a large sample of those errors highlighted in the grading movie, and I know this realization will make a huge difference in her final project.

Theatrical directors report that some of our most respected dramatic actors are completely useless on the first reading of a script. Once the director clearly delivers an expectation, such as “Play this like you recognize the suspect you just arrested is the guy who robbed your lunch money on the playground when you were in second grade,” they are magnificent on the stage or screen, and get it just right. Some students are like that, and video can be the ideal medium to make the necessary direction clear.

Creating Effective Grading Movies

As with any interpersonal interaction, the devil is in the details with grading movies. Here are some pointers to assure that your investment of time and energy pays off:

Manage expectations. Triage must guide you when deciding when to do a grading video. You don’t do them when you know they are not needed, or when you know they are desperately needed but will not help. Make sure your students understand that they can expect a grading video only when you feel it is the most efficient method of communicating about a project and that sometimes you will not consider one necessary. If you use grading videos at all, any student should be able to request and receive one for any project where he or she desires more information about how the project was evaluated.

Continuing with the analogy of the movie director, you can’t give the actor an explanatory note on every word on
every line in the script. You need to be selective and concentrate on typical instances of the student's most persistent weaknesses and strengths. No grading video should exceed 10 minutes. Resist the temptation to reteach the course in the grading video.

*Be realistic about production standards.* You cannot afford to play the perfectionist with these movies. When I make an instructional video of one hour, I expect it to be viewed by hundreds of students over four to six semesters before it needs to be replaced. I don’t mind investing 20 or 25 hours of effort in perfecting that video. A grading movie is only going to be viewed once or twice, and by only one student. Many grading videos will need to be produced in the tiny window of time between the due date of the project and the grading deadline. So good enough has to be good enough.

There is no time to eliminate all the coughs, filler words and dead spaces through careful timeline editing. There is no time to ponder whether this turn of a phrase would be slightly better than that one, as you would if you were writing a journal article. I never do the produce-and-share step on an instructional video until I have watched every second of it with full attention at least three times. With grading movies, it is, of necessity, “one and done.” The students will understand this even if they take my Computer Videography course covering the importance of production values.

*Refer to touchstones.* A grading video must demonstrate a strong connection between the quality criteria you stated in your project specifications document and how you evaluated the project that the student delivered. You don’t want students to feel that the movie is only documenting your fleeting emotional reactions to their work. I often show parts of the actual project specifications or course syllabus documents in the grading movie itself, and highlight exactly the phrase that shows where the student needs to improve. Sometimes I find it valuable to shift the video to a component of a quality project done by another student to emphasize an example of a correct or imaginative use of a particular technique.

You always want to provide the student with guidance on how to make things right. Touchstone references are the perfect tool for this purpose. One recent student included a note saying that a required element was missing from his project because the book wasn’t clear on how to do it and he “couldn’t find any other resources about it.” I used the grading movie to show how to access the “unavailable” information with four clicks from the Reference Guide for the software used in that project.

Never breach confidentiality by using a grading video of a poor student performance as a teaching tool for other students, even if the work you are critiquing has no identifying elements and the student who created it can be coerced into giving permission for this use. It is perfectly okay to use a very good performance as a teaching tool for others (with permission of the student), provided what you say in the movie is 75 percent positive.

*Say good stuff too.* Criticism should be directed at the project, not the student who created it. It should be tempered, to the very limits of honesty (but not beyond them), with warm recognition of what the student did well. I always try to start and end by saying something positive. I have gone to considerable trouble to try to find something to praise even in projects that I graded F. The message is never “You stink!” or “Your work reeks!” but “I see some places here that show promise and growth. Now let’s look at what I will be expecting when you get to the next project.” You don’t want students to come away thinking that they are simply hopeless and can’t ever do anything right.

*You cannot afford to play the perfectionist with these movies.* Many grading videos will need to be produced in the tiny window of time between the due date of the project and the grading deadline.
Grading Students as if Both You and They Were People

The advantages of fully online college courses have been well-documented. But their limitations are also getting increasing attention, and the biggest challenge is the chasm they can create between teacher and student. Distances of hundreds of miles can make it very difficult to know each other, to experience the class from each other’s point of view and to respond appropriately to each other’s needs. Used poorly, technology can be just one more instrument of our mutual alienation, for which our society has plenty of instruments already. Used wisely, through devices such as well-done project grading movies, that same technology can go a long way to bridging the distance between your unique humanity and the equally unique humanity of each of your students.

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Google Glass Gives Learners a New Point of View

A Glass pilot at the State University of New York Cobleskill is exploring hands-on, experiential learning with first-person video capture. CT caught up with CIO Jim Dutcher for his perspective on the project.

By John Pulley

What if a paramedic student could view a delicate medical procedure directly through the eyes of his instructor, and then apply that experience to his own practice? A new pilot program at State University of New York Cobleskill will allow students to do just that, using Google Glass to provide first-person point-of-view video capture and replay in an academic laboratory. According to SUNY Cobleskill CIO Jim Dutcher, the pilot seeks to enhance the delivery of experiential learning in support of traditional modes of instruction in two programs: paramedic training and animal hoof health.

CT: Can you give us a brief overview of the program?

Dutcher: We are a four-year school in the SUNY system. We pride ourselves on hands-on, experiential learning. We are excited about piloting the use of new wearable technology. We’ve made quite an investment in setting up a state-of-the-art simulation lab, and we are very proud of that infrastructure.

We’ve selected Google Glass because of its all-encompassing nature. You can record video streams and readily connect to the Internet. We are very eager to see how this can be incorporated pedagogically
Jim Dutcher will chronicle his institution’s Google Glass pilot in a series of articles for CAMPUS TECHNOLOGY. Read his first installment, “Getting Started With Google Glass,” online.

C-Level View

to have exceptional learning and teaching outcomes.

CT: The pilot will feature instructor point-of-view learning. Why is this important?

Dutcher: Being able to capture someone doing something in an expert fashion will lend itself to the creation of blended learning environments. Students can preview somebody else going through [a procedure] before they have to perform it live. It’s the difference between a biography and an autobiography: The biography can give relevant facts and details, but to experience what a person went through, the better read is the autobiography.

CT: The hope is to use this new technology as a means of bridging the instructional gap that exists between delivery of theory and getting students in the field to apply and practice what they’ve learned in the classroom. Is that right?

Dutcher: In these labs, students are assessed based on their performance. In the paramedic lab they have to perform medical processes precisely. In the animal science hoof disease program, they have to perform minor surgery in an exact way. There is not a better way to do this than to get the first-person perspective on what procedure you are being graded on. Google Glass allows for that to happen. In a traditional academic lab setting, whether medical or animal science or biology, the instructor is only one person who would have to wander about. The moment is lost after the lab ends. There is nothing available to capture or replay. Today we have the capability of putting video in the classroom. With wearable technology, a student can preview how a prior expert or student or faculty expert demonstrated [a procedure] from their first-person perspective and how things should be done. When it’s the students’ turn, we’ll be able to capture their performance and be able to replay it [for the purposes of] faculty grading and the betterment of students. Research shows that the first-person perspective has a very positive impact on student learning outcomes. It gives a better overall understanding of the skills they need to acquire.

CT: How much of a technical challenge will this be?

Dutcher: It will be a challenge. How big will be determined by what combination of approaches we use. We have different technologies and combinations that we could select. The challenge is to find what is most effective and efficient. We have a plethora of technology to experiment with, but when it comes time to do our pilot in the laboratory in the spring, we will have that repertoire down, just as a conductor would in front of an orchestra. We’ll make sure our music is accurate for everyone who will be playing.

CT: What’s involved?

Dutcher: Determining what elements work best together, what tweaks we have to do to get various technologies to work in a network in a wireless envi-
vironment, to make sure that what we do is safe and secure. The faculty and students really don’t care about what we have to do. For them, this should be as easy as flicking on the lights.

CT: You’ll also be learning how to ensure privacy and security and compliance with federal regulations, including HIPAA and FERPA. What is the challenge there?

Today, because of FERPA, no college can post grades in public or any assessment activity that records actual lab work. That is private and held in confidence between students and faculty. We have to protect that. But there is opportunity for those who excel [at procedures] to perform and capture the first-person point of view to benefit other students. It will certainly be on a permission basis, and we have to protect the personal data.

CT: The pilot will focus on instruction in the areas of bovine hoof health and paramedic training. Why those areas of instruction?

Dutcher: These are labs that are very hands-on. The environment in my opinion is well-suited for wearable technology. Students and faculty will be able to operate hands-free and not have to worry about getting the technology to work. They’ll be able to focus on their academic obligations.

CT: Do you expect the technology to accelerate acquisition of student competency?

Dutcher: Absolutely. Learning happens in one of two fashions. One, being able to relate to one’s experience. Or two, having that direct experience. We have a large amount of experiential programs where learning happens hands-on. Being able to capture and relive the moment solidifies it in one’s brain. It’s a case of “I’ve been there and done that and I can relate.”

CT: How about the impact on peer interactions?

Dutcher: People want to do well. They are self-motivators, but learning also happens on a competitive basis. When you have other people besides faculty critiquing your work, I think that helps tremendously. The analogy would be open source technology. A tremendous number of people contribute to open source efforts to develop software and hardware. They are successful because people take pride in their work. They know that what they are doing will be out there for everyone to see. The opportunity to provide feedback promotes a cycle of constant improvement. This technology enables that whole circle of continual improvement and good learning outcomes.

CT: Do you expect the technology to translate across different instructional programs?

Dutcher: I foresee other academic programs benefiting from wearable technology. I’ll rely on faculty experts to call and say “I think this has applicability in my archeology program or my paleontology program.” You never know. Once other faculty members see this in real life, they will come out and say “I want to try it.” That’s where the innovation will happen.

CT: How is Google supporting the pilot?

Dutcher: Google has been wonderful. Originally we were going to procure 15 to 20 pairs of Glass. We told them about the pilot, and they were willing to match that with an equal number at no additional cost.

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