OUTSOURCING I.T. IN HIGHER ED: A NECESSARY EVIL?

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The IT Issues Ahead

Educause recently revealed its Top 10 IT Issues for 2017, prioritizing information security for the second year in a row and emphasizing data, infrastructure and IT leadership. What issues will most impact your institution?

Each year at the Educause annual conference, I make sure to catch the preview of the coming year's Top 10 IT Issues. It's always a packed room (it's a good idea to arrive early to find a seat), full of attendees with cameras ready to capture the presentation slides as they appear on the projection screen. After all, the Top 10 IT Issues are like a bellwether for the year ahead, pointing to key trends and challenges that every higher ed IT leader should be thinking about.

The issues for 2017 were notably IT-centric, with information security topping the list for the second year in a row and a heavy emphasis on data, infrastructure and IT leadership (see box at right). Three new issues made the list for the new year: strategic leadership, defined as "repositioning or reinforcing the role of IT leadership as a strategic partner with institutional leadership"; higher education affordability, "prioritizing IT investments and resources in the context of increasing demand and limited resources"; and next-gen enterprise IT, "developing an implementing enterprise IT applications, architectures and sourcing strategies to achieve agility, scalability, cost-effectiveness and effective analytics." Teaching and learning made the bottom of the list with issue No. 10: digital transformation of learning, defined as "collaborating with faculty and academic leadership to apply technology to teaching and learning in ways that reflect innovations in pedagogy and the institutional mission."

(Read our full analysis of the Top 10 IT Issues here.)

While the Top 10 IT Issues are valuable in themselves, I find it equally interesting to observe the conversations that they spark. At the Educause session, a panel of IT leaders asked audience members to vote on which two themes they most wanted the panelists to discuss. The response:

- Next-gen enterprise IT (53%);
- Digital transformation of learning (38%);
- Strategic uses of data (38%);
- Information security (30%); and
- Focused and relevant priorities (29%).

It seems clear that with all the changes in higher education — advances in data analytics, new learning models, cutting-edge technologies — IT is constantly challenged to maintain and evolve its core infrastructure. In other words, solve the problems of next-gen enterprise IT. Information technology is a balancing act, noted the panel. It's about agility, vendor relationships, integration and managing the systems, strategies and resources needed to support the fundamental mission of the university.

The Educause panel also revealed a longer slate of issues from which the final top 10 were derived, providing an interesting view into what topics didn't make the cut: change leadership; digital transformation of scholarship and research; faculty adoption of technology; identity management; IT partnerships; IT service management; next-gen IT workforce; and online education.

I'd say change leadership received short shrift in the 2017 top 10, and faculty adoption of technology is an ongoing challenge that can't be ignored. What issues would top your list? CT

Continue the conversation.
E-mail me at rkelly@1105media.com.
STUDENTS ON TECH. Eight in 10 college students in a recent survey said that the use of digital technology improves their grades (81 percent), lets them spend more time studying by increasing the accessibility they have to their materials (82 percent) and improves their efficiency (81 percent). Those results come from “Digital Study Trends: Student Habits,” a survey done on behalf of McGraw-Hill Education by Hanover Research among 3,311 current college students. Students also said they would like to see greater use of personalization: Eighty-nine percent agreed that digital learning tech “should respond and adapt to my unique way of learning.” Eighty percent also reported that the tech “should be more individualized.” And 70 percent stated that it “should feel as tailored to me as my social media feeds.” Read the full story online.

MINING LMS DATA. For several years, the University of Nevada, Las Vegas has used Splunk Enterprise to monitor the efficiency of its IT infrastructure and to help identify potential issues. Now, the institution is tapping into the analytics platform for academic research, mining data from the learning management system to better understand how students learn. Supported by a grant from the National Science Foundation, UNLV researchers are using Splunk to gather clickstream data from the LMS, analyze which learning resources and behaviors most impact student performance, and then provide customized learning materials to at-risk students. As a result, UNLV has seen up to a third of students in pilot programs improve from C grades or lower to A or B grades, with lower class dropout rates overall. Read the full story online.

EVALUATING COURSEWARE. The Online Learning Consortium (OLC), in collaboration with Tyton Partners and SRI International, has formally released the Courseware in Context Framework. The framework is an open suite of resources “designed to help postsecondary decision-makers make informed selections of digital courseware products, and support effective adoption and implementation of these solutions,” according to a news release from Tyton Partners. OLC said it hopes the framework will help educators “cut through confusing marketing messages” and tap into “the growing body of efficacy research studies related to product capabilities.” Read the full story online.

BUILDING A PORTFOLIO. Two Ohio institutions are building a web-based application to help students submit a digital portfolio of prior learning that can be assessed for college credit. Columbus College of Art & Design and Franklin University have teamed up to create “Credit for Life Integrated Portfolio,” software with a focus on assessment of prior learning, the competency-based model and e-portfolio usage. The system is expected to be developed by technologists from both schools this year and implemented for the next academic year, and will then be shared with other Ohio institutions. Read the full story online.

CYBERSECURITY AWARENESS. An increasing number of millennials are considering careers in cybersecurity, according to a new report from Raytheon and the National Cyber Security Alliance. The report, “Securing Our Future: Closing the Cybersecurity Talent Gap,” surveyed 3,779 adults aged 18 to 26, from 12 countries around the world, including the
United States, Australia, the United Kingdom and countries in Europe, Asia and the Middle East. The report attributes increased interest in cybersecurity careers to numerous factors, including initiatives designed to increase awareness of the profession, school cyber competitions, an increase in cybersecurity education, and news about cyberattacks and related political issues in the media. Read the full story online.

LEARN TO CODE TUITION-FREE. Davidson College (NC) is launching a program that will allow students and graduates to enroll in RevaturePro, Revature’s main training program, for free to learn modern software development languages. The training is self-paced and features 18 courses, from beginning to advanced, with real-world exercises, a mentor and access to certification. Once students complete the course, they will be able to

PRODUCT ROUNDUP

Techsmith’s Camtasia video creation platform has been updated with new features designed to enable instructors to make their videos more professional looking. Read the full story online.

Google has changed the name of its Google Apps for Education to G Suite for Education, and incorporated “machine intelligence” to facilitate and add more functionalities. Read the full story online.

Salesforce Advisor Link is a mobile advising application built on top of Salesforce’s CRM that delivers a holistic view of each student’s academic experience. Read the full story online.

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The National Association of State Procurement Officials’ Purchasing Cooperative
to enroll in a free 12-week coding boot camp at Revature’s Reston, VA headquarters — which guarantees employment with Revature for those who successfully complete the program. Read the full story online.

**VR MEDICAL TRAINING.** A new virtual reality lab at Stanbridge College (CA) allows students to observe and interact with virtual-holographic 3D models and animations for medical training. The lab is outfitted with virtual reality all-in-one computers and software from zSpace, as well as Cyber Science 3D and Cyber Anatomy 3D virtual dissection apps. Students in the college’s Nursing, Occupational and Physical Therapy, and Veterinary Technology programs can now access more than 1,000 models of biological and anatomical structures, ranging from the cellular level up to human or animal bodies and body systems. “Using a stylus and 3D glasses, students can virtually ‘lift’ an object off of the zSpace screen, manipulating and adjusting it to see it at different angles and magnify it for fine details,” according to a press release. Read the full story online.

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sri ravipati

In Case of Disaster, Plan, Test and Plan Again

Brandeis University’s deputy CIO and CISO explains how drafting and testing a disaster recovery plan can help clarify crisis decision-making and foster organizational cohesion.

When it comes to preparing for an IT crisis, it is not enough to merely have a plan. Disaster recovery plans (DRPs) can age quickly and need to be routinely tested — a process that involves not only an institution’s IT organization, but senior executives throughout the institution. CIOs may find it challenging to engage leadership about the cost of redundant systems or the benefits of cloud storage, but involving the administration in planning can help later on, according to Michael Corn, deputy CIO and CISO at Brandeis University (MA). Campus Technology asked Corn about the state of disaster recovery planning in higher ed and some best practices for creating and testing a DRP.

Campus Technology: How sophisticated are most institutions about disaster recovery planning?

Michael Corn: What you’ll find is that preparedness covers the entire spectrum from, “Oh my god, what're we going to do about disaster recovery?” to, “We’ve got this down to a fine art.” Educause recently sponsored a webinar where we talked about disaster recovery at length, and we polled the couple of hundred [participating] institutions about where they were [on that spectrum]. We found about 60 percent of them felt at best they sort of muddled through a true disaster. There were only about 10 or 15 schools that were actually confident that they were prepared. But I think it’s safe to say most places are becoming aware of the criticality and the need to mature their DRP exercises.

As more and more schools are moving some of their core services to the cloud, they gain disaster recovery resilience in that process. For example, if tomorrow we had some sort of disaster at Brandeis that totally eliminated the campus network, most people would still be able to log in to their Gmail accounts because you can do so without using any other Brandeis services. Having said that, not a lot of schools have moved their core administrative functions off site. Whereas you do see services like Workday becoming more common, relatively few schools have done this. So we...
may be able to e-mail one another if our network [stops working], but it’s not clear we have a good way to cut paychecks or any other kind of administrative functions.

CT: What are some key considerations for drafting a plan? Who should be involved in the planning process?

Corn: They key thing is to recognize that a DRP needs to be driven out of the business part of the organization. There are several reasons for that — one of which is if you had some sort of disaster that eliminated or disrupted many of your services on campus, you would have to make decisions as to which ones to bring back first. Some of those decisions are driven by infrastructure: If the network is down, you cannot bring back any service, so obviously network has to be brought back. When it comes to making that next-level service decision about what to bring back — payroll, timekeeping, learning management system, network file shares — those have to be driven by the business. In other words, it is not an IT decision to bring back your ERP versus your LMS; it is a business decision that involves the most senior executives in the organization.

It is critical that when you are reviewing a DRP, your president, chancellor, provost agree and sign off on the decisions. What you don’t want to have happen is that in the middle of a disaster when you are trying to restore things according to your plan, your provost or president is second-guessing your decisions. In addition, disaster recovery planning can be expensive. If you are talking about making services redundant or making services more resilient, that takes money and resources. When you take those kinds of problems to senior leadership, they will often go, “What, it takes a week to restore that? We think that should happen faster,” and you can tell them the cost.

CT: What are the best ways to rehearse/test the plan? How often should that be done?

Corn: You should conduct a significant tabletop exercise testing your DRP at least once a year. Most institutions, if they do one once a year they’ll declare victory because that seems to be as much as they can do. The reason is that to really test a plan effectively involves setting up a scenario that challenges the whole institution — one that requires putting all your executives in one place and having them respond to a set of problems, and having your operational staff in another place and having them respond to the operational details of the scenario — which takes a lot of planning and coordination. When we tested our DRP last August, the president couldn’t be there because she was out of town and the provost had to leave in the middle for another meeting. That brought up a conversation about who’s making decisions and who is in charge, and those are the conversations that you need to have before a disaster occurs.

Having said that, there is no reason that you cannot have smaller, operational-only tabletop exercises within your IT organization. I am a real believer that these micro-tabletop exercises are healthy for an IT organization.

CT: What are the top priorities for IT when a disaster occurs?
**DISASTER RECOVERY**

**Corn:** I think the really critical piece is communications. It is one thing to call the communications office and tell them what is going on, enough where they can then reach out to the press, the president, other executives. But if you have a disruption to your services, people will start calling the help desk. Does the help desk know what to say? If you call an academic unit or business unit, which each have their own points of contact for their internal and external communities, do they know what to say?

One of the things you are trying to minimize is rumors that can escalate very quickly. You need be very careful about how you communicate and you need to communicate broadly. The challenge is that many places, especially smaller shops, are not going to have a communications staff, so you need to actually decide who calls who, who puts together the message — and it can’t be the same people who are trying to fix the problem. In some cases, it may mean that you need to designate a senior IT person who has good communication skills to put a message together.

**CT:** What are some common mistakes institutions make in their disaster recovery planning?

**Corn:** The No. 1 mistake is not testing enough, and No. 2 is not involving the organization outside of IT. As a consequence of that, there are frequently a lot of assumptions people make about how prepared you are.

At my last institution, we had an eight-hour power outage. When I was listening to some of the debriefing after the incident, the facilities people said the No. 1 question they got was, “Why hasn’t my emergency generator kicked in yet?” Well, most of those people did not have emergency generators; they assumed they had them. To me that revealed that you really have to practice these things to document assumptions and you have to be really clear about who is involved and who is notified. When you drill through tests, those kinds of questions surface.

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**CT:** What are some resources available to help institutions draft a disaster recovery plan?

**Corn:** There are a few great resources out there. First, Educause has a huge amount of material online. You can get DRPs, tabletop exercises and guidance there. The webinar we gave was very good — my piece was just at the end of that, but there are two or three hours before where people are talking about their experiences — that can viewed and downloaded online. Another big one is that you can Google other universities’ DRP tabletop exercises. Many institutions have a website where they talk about their DRPs. They are not going to give you details as to who they would call at two in the morning, but they will talk about their general planning process.

One of the great things about working in higher ed is if you stumble across someone who is doing a good job, the odds are if you call them, they will be more than happy to spend a couple of hours talking to you. When we revised our DRP over the last year, we reached out to the folks at the University of Connecticut because they’re close to us. I know the person who did their DRP and not only did he share their experiences with us, but he drove to our campus and spent a morning going through our plan, acting as an outside reader. That was fantastic for us because they were a year or two ahead of us in their planning maturity and it was a great experience to learn from what they did, and to hear their insights on our plan. **CT**
Scaling Up With Adaptive Learning

Two universities share how they are using adaptive courseware to increase retention and graduation rates — and the challenges they have run into along the way.

Earlier this year, eight universities across the country embarked on a bold experiment to see if they can scale up the use of adaptive courseware to increase retention and graduation rates. With support from the Association of Public Land-grant Universities (APLU), these schools have set a target of using adaptive courseware for 15 to 20 percent of general education course enrollments between spring 2017 and fall 2019. APLU’s Personalized Learning Consortium is overseeing the grant program, which is funded by the Bill & Melinda Gates Foundation.

The universities — Arizona State University, Colorado State University, Georgia State University, Northern Arizona University, Oregon State University, Portland State University and the University of Mississippi — certainly have their work cut out for them. Tailoring a course to adaptive learning can be difficult, as we learned last year when Campus Technology interviewed faculty members involved in pilot implementations of the technology.

Despite being encouraged by the results, those pioneers reported being exhausted by how much work is involved in retrofitting their courses to the adaptive platforms. So how will the APLU grantees tackle the task? We spoke with two executives participating in the grant program about their goals and the early challenges they see.

Tackling High-Enrollment Courses in Oregon

“The reason we are interested in adaptive courseware is to improve student learning and student success. The adaptive courseware is just one approach to help us increase retention and graduation rates,” said Julie Greenwood, associate dean for undergraduate studies at Oregon State University.

OSU is focusing its efforts on eight high-enrollment courses that also have high attrition rates, in fields such as college algebra, psychology and chemistry. Some OSU faculty members have already experimented with adaptive courseware, but not in an extensive fashion. “It is being used for homework or extra credit,” Greenwood said, “but the technology is challenging enough that they are not integrating it into the course and not taking full advantage of the analytics.”

Greenwood pointed out that the adaptive courseware could help faculty members shift content delivery from lectures to a blended format, where students view course materials online before coming into class — and instructors tap into the data on their progress. “A faculty member can come into the classroom with 200 students and know that a majority struggled with three particular problems...
and decide to focus on those with their class time,” she said. “That is the value of the analytics.”

APLUs has given its grantees a list of 20 approved adaptive courseware vendors to choose from, and OSU is seeking to develop a model and structure that will allow the university to support faculty members in implementing the courseware that fits the curriculum they teach. The math department, for instance, is planning to do an in-depth evaluation process, starting with development of the metrics and rubrics it will use to make that decision. “We would like to see flexibility from the vendors for the instructors to be able to provide their own content,” Greenwood added.

Because of the time and effort involved in implementing adaptive learning, one of the challenges is how to motivate faculty members to participate. Schools can offer stipends or other faculty incentives, but timing can be an issue, Greenwood said. “We had one faculty member who had just spent five years redesigning her curriculum. This was not a good time to ask her to throw all that away and start over again.”

A positive faculty experience is going to be critical to OSUs ability to scale up. “We have to provide structure and support to help the faculty deal with the technology,” Greenwood said. “We want them to focus on curriculum and instruction, not to have to figure out how to get this to work in Canvas, how to access the analytics or worry about students not being able to log on. We have to provide a structure here at

the university that eliminates those barriers, so this can run smoothly. We also need a positive student experience. We need to measure the student experience as it goes along, respecting their feedback and monitoring their success.”

**Going University-wide in Arizona**

Northern Arizona University has an even broader mission than the APLU grant entails. “Instead of approaching just general education, high-enrollment courses, I think it is time and decide to focus on those with their class time,” she said. “That is the value of the analytics.”

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**ADAPTIVE LEARNING IN THE HUMANITIES**

Most software vendors developing adaptive courseware have so far focused on math and science curricula first before turning to any humanities courses. But Introductory English Composition is another general education course universities want to address, so the Association of Public Land-grant Universities is supporting four universities in a collaborative project to develop English composition adaptive courseware. Georgia State University, Montclair State University (NJ), the University of Georgia and the University of Mississippi are using the Smart Author platform from Acrobatiq to co-develop courseware and test it out at all four campuses.

Robert Cummings, associate professor of English and director of the Department for Writing and Rhetoric at Ole Miss, said the term adaptive has sometimes been construed as checking student answers for how they are right or wrong. “In content courses, the ways that things can go wrong are limited or predictable. But of course, the ways things can go wrong with writing are perhaps unlimited. But that doesn’t mean that adaptive doesn’t work in the composition classroom.”

In earlier work with the Open Learning Initiative at Carnegie Mellon University, Cummings said, electronic courseware developers at Ole Miss learned that they had to tighten up the English composition course space and narrow down the tasks students were asked to do in a writing context. “We have to allow students to focus on one task at a time, and then try to assemble the writing they had already done into more coherence. We always have taught writing as a process. This gave us a much more structured approach to that.”
adaptive courseware. Of the 20 APLU-approved vendors, Carter has identified five that he thinks are the most promising, and NAU instructional designers and faculty are reviewing their offerings.

“We are going to approach things in three ways: One is a full course redesign with us adopting the offering from a vendor as a full textbook replacement,” he said. (NAU’s pre-calculus course is already based on Pearson’s MyLabs-Plus.) The second approach involves finding smaller building blocks of pre-built modules about particular topics or troubling content. “The third approach is adopting a platform in which my instructional design team and faculty can build their own modules,” Carter said. One discipline that may try that option is foreign languages, because the vendors have almost no material in that area, he added.

NAU has engaged faculty members in a course redesign effort called “intentional curricular design.” But Carter said designing for adaptive technology takes even more work. “Once you add technology, you have to design down to the concept level. You have to sequence and connect things. We are talking about hundreds of minutiae if they want to build their own.” Do faculty members realize what a time commitment that is? “Those who haven’t been involved before may want to try it, but I don’t think it will be very long before they realize how hard it is,” Carter said. “We don’t have enough money on the grant to pay very many people to build their own [modules]. The approach of the grant program is to buy off-the-shelf things. We are not allowed to develop our own technology system, but we can put our own content in and use someone else’s platform. But it is going to be problematic to do very much of that.”

Both Cummings and Isaacs said the English composition courseware available on the market still leaves a lot to be desired. “I haven’t seen everything out there in the adaptive space in English composition courseware,” Cummings said, “but I haven’t seen anything that I would consider to be truly adaptive so far.”

The campuses broke up an English composition course into four units and the universities developed one unit each. Some had faculty members teach with the new curriculum in the summer and others started this fall.

“We are always trying to think of ways to help our weakest writers scale up quickly and efficiently, including technologies to accelerate and personalize the learning experience for student writers,” said Emily Isaacs, associate dean of the College of Humanities and Social Sciences at Montclair State. “Each of the four schools in the grant project had been picking at this difficult challenge in our own ways on our own campuses for a while,” she explained. “I like the idea intellectually that you can do this with any discipline, but it is very hard. The theory is very easy; the practice is very, very difficult. Sometimes we can overestimate the capacities of the technology.” A big piece of the puzzle is that the adaptive platform itself is still in development at the same time that the faculty members are developing the ideas, she said.

Most of writing is doing, not knowledge attainment, she stressed. “The ‘aha’ moment does not come from reading about what an introduction should have in it.” But she said the adaptive software does help instructors see which students are misunderstanding a concept such as counter-argument. “You either know you did a bad job in creating the quiz or you know that nobody gets it, and you have to spend more time on it. It can clue teachers in.”

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APLU grant program are sharing procedures, protocols and results and will try to do some cross-institutional studies. They also plan to sustain their efforts beyond the grant program. “We were a strong candidate for the grant program because we were already doing this,” he added. “We had no intention of taking the money and running. We are using it to give us the next-level quantum leap into doing this and we are going to continue.”

David Raths is a freelance writer based in Philadelphia.
Why the Switch to OER Is Easier Than You Think

Taking into account library articles, web links, videos, simulations and more, many courses are already using a number of open education resources — and the move to full OER doesn’t necessarily mean a total revamp, according to research out of Excelsior College.

A RECENT SURVEY of 3,000 faculty members by Babson College reported that six in 10 instructors (58 percent) were “generally unaware” of open educational resources (OER). Some were downright resistant to the whole idea. “I am against freely giving faculty intellectual property,” declared one respondent. “It is tantamount to working for nothing. The universities don’t want to pay us and the book companies don’t want to pay us.”

But it’s also possible that people are using OER and just don’t know it, as an ongoing OER research project at Excelsior College is discovering. The thought of converting courses to OER can be “very daunting,” pointed out researcher and instructional technologist Kimberly Barss. “I have seen that we have really good courses with tons of links and simulations from the internet that didn’t cost anything,” she said, noting that while professors often assume that a switch to OER means redoing their entire course, it doesn’t have to be that way. She thinks that by showing faculty how close they are to being fully OER supported, the endeavor becomes more doable — like a stretch goal and not a completely new undertaking.

Excelsior is a New York-based private, nonprofit institution running online programs for degree completers who want to advance their careers. The school’s mission is to serve students “traditionally underrepresented in higher education.” The latest strategic initiative puts an emphasis on affordability, and OER plays into that goal. Barss remembers starting at another school as a doctoral student with a new baby and being unable to afford the books: “So I didn’t buy them. The school that I was attending provided some digital resources for us. I just started to think, well, why can’t we always have digital resources that we don’t have to pay extra for?”

Research Outcomes

The research began in Excelsior’s School of Business & Technology, where out of 200 courses, 28 are fully supported by OER. In those, Barss and colleague Katie Hammer, an online program assistant in the college, examined the impact of OER on student enrollment, drops, completion (with grades of C or higher) and student qualitative feedback from end-of-course surveys.

Mostly, there was no difference. Students were getting the
same grades and showing similar satisfaction with their courses. At first, that lack of distinction distressed Barss. “I thought it was a detriment to OER. I wanted it to be better,” she recalled. “But in speaking with some of the assessment individuals, they said, ‘No, that’s great!’” — the implication being that OER was living up to the quality and value of traditional course materials.

However, one change that seemed to be consistent was growing enrollment in fully OER classes. “When I look at each one of those terms, the enrollment is going up in a lot of these courses — in some cases almost as high as half again,” said Barss.

Looking at 53 of the school’s required and/or highest enrollment courses that weren’t fully OER, the researchers evaluated the use of textbooks, library articles, readings, videos and other resources. They found that those were on average about 65 percent supported by OER — in other words, well on their way to being fully OER.

Now the research has turned its sights onto the Health Sciences program, which has a total of about 140 courses, of which 14 are fully OER-supported. Of two non-OER courses that have been examined so far, both are about 70 percent supported by OER. The health sciences are ripe for OER, said Barss, especially in the area of public health, “because of the immense government resources we have with the [Centers for Disease Control and Prevention] and the [National Institutes of Health], where they have such a wealth of information. They even have simulations and images and videos that a school would be crazy not to use as a source because they’re free and definitely up-to-date. And those are sources you don’t have to worry about the quality of because they’re vetted by experts.”

One broad outcome of the work to date has been that Excelsior has received a bird’s-eye view of its OER efforts. Currently, about 80 courses across the college are completely sup-
ported by OER. Administrators would like to see that increase to 100 by the end of the fiscal year, June 30. So the current area of emphasis is to prioritize where OER should strike next.

One obvious place to begin is to bring the “obstacle” courses into the fold. Those are the “most highly enrolled courses that result in the most failures and therefore are the biggest programmatic stumbling points,” Barss explained. So far 14 have been identified with the most immediate need for conversion. As an example, she said, a microbiology course uses a textbook with a cost of $342. “We’re looking to get rid of that one as soon as possible.”

**OER Lessons Learned**

During the course of becoming the in-house OER expert at Excelsior, Barss has picked up a few lessons worth sharing.

**Even the most unique courses hold possibilities for OER conversion.** For example, among those examined in the College of Business & Technology are programs focused on nuclear technologies. OER for those “are not out there in abundance,” acknowledged Barss. But even there, she’s heard “whisperings” of a National Science Foundation grant to develop and distribute OER for that segment.

**Seek help from the experts.** Excelsior became a MERLOT partner at the beginning of its OER efforts. “They have project director meetings, they have conferences, they have educational webinars, and that was really helpful,” insisted Barss. “They’re structured, thoughtful, experienced. Having that sort of mentored guidance has been very helpful.”

**Internal audiences need to know just what OER looks like.** Currently, the college is promoting EnCORE, a catalog organized by course and course type, to let faculty and program directors know what kind of OER is in use in a particular school or discipline, which will enable them “to share and use resources too,” said Barss. The EnCORE work is a branded version of the MERLOT OER infrastructure.

**Make it easy for faculty.** One of Barss’ favorite tricks is to share a field on EnCORE where an instructor can enter the ISBN of his or her current textbook to locate a list of related free digital materials. “That is really just the most amazing thing,” she marveled. “I try to give that to anyone I ever possibly can. It’s so much more helpful than going at it blindly.” The college has also developed a set of rubrics to help faculty evaluate the quality of the OER they’re considering, “so they don’t feel like they’re just unsupported or blindly choosing.”

**Consider tying OER conversion to other compliance efforts.** In many cases, converting to OER is not only free, said Barss, but also adheres to the requirements of the Americans with Disabilities Act, making a course more universally accessible. “While we do find some resources that are great and we can’t use them, that’s definitely more the exception than the rule,” she added.

**To gain buy-in, share the data.** “I’ve found that people respond well to numbers,” Barss noted. To that end, when she has the time, she undertakes the tedious work of calculating how much money students save by not having to buy textbooks. That includes pulling together information on textbook prices and class enrollment. Among 26 of the 28 courses in the College of Business & Tech that are fully OER, the savings for the year was $569,711.06. (The remaining two courses haven’t been delivered to students yet.) Among the 80 courses college-wide that use OER completely, a single term for just half of those courses saved nearly $1.3 million.

Ultimately, Barss said, she has learned that the use of OER results in a better quality class. “It’s so easy to go, ‘OK, the next edition of the textbook came out. We’ll use that.’ Then you don’t pay as much attention to the integration or the alignment with outcomes or how students are going to interact with it or whether your exam is fully supported.” The use of OER forces the instructor “to evaluate every aspect of the course,” she noted. While that aspect of the research can’t be “isolated from our results, I really believe the courses are better designed. The two are inseparable. And I think that’s probably one of the best things that’s come of this.”

Dian Schaffhauser is a senior contributing editor for Campus Technology.
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The Future of Collaboration Spaces

A recent learning space renovation at Indiana University focused on informal learning, collaborative technology and sharing ideas and content across multiple devices and users.

SPACE MATTERS. On the surface, it’s a simple statement — but in practice, it’s something entirely different, especially when technology becomes an integral part of that space. When it works (i.e., when space design is thoughtfully planned out ahead of time), space can foster the transformation of the classroom from one-way communication and transmission of knowledge (the “sage on the stage”) to a vibrant, active learning environment where all users participate and engage with the content. In fact, when technology is thoughtfully planned in alignment with space — and especially with the intent of solving a problem or encouraging a specific type of activity or behavior in the space — the technology complements the space design to create the possibility for a whole new paradigm shift in the way learning happens.

When the intent of a learning space is to foster collaboration, that space must facilitate activities that optimize teamwork. In the past, however, such activities were often hindered by technology that was incongruous to the space in which it was installed — or even an outright barrier to collaboration. For example, a single display, connected to a single device, would restrict active collaboration to just the content of that device: There was no opportunity to synchronously share content from multiple devices. The only way to “share” content was to take turns connecting individual devices to the single monitor — a tedious process, and by any definition not a very collaborative process.

In various Indiana University classrooms, such “incongruity” was once very much in evidence. Clearly, a new vision for collaborative spaces was necessary, and one that would create equal access to all users by providing a mechanism for the sharing of all perspectives. It was quickly realized that a major component of this vision would focus on the personal mobile device: When such devices are leveraged in a learning environment, this “equal access” to sharing of ideas provides the framework for a whole new level of collaboration. The ability to wirelessly (and seamlessly) connect multiple or perhaps
LEARNING SPACES

A recent $21 million dollar renovation of Indiana University’s Media School, housed within the historic Franklin Hall on IU’s Bloomington campus, focused on fostering this type of learning in a space that invites collaboration and movement. To encourage group brainstorming, for example, the classroom space features a strategically placed glass whiteboard; after students collaborate on the board, they can instantly take pictures of their work with their mobile devices and share them wirelessly on an interactive video wall. The video wall was installed with a full glass overlay so that students and instructors can manipulate and otherwise interact with displayed content.

Yet today’s learning environment has expanded well beyond the traditional four-walled classroom. Informal learning spaces, external to the formal classroom, should become an extension of the overall learning experience. In particular, mobile devices can play a major part in facilitating this learning outside the classroom.

Collaborative Learning at IU

Today’s learning environment has expanded well beyond the traditional four-walled classroom. Informal learning spaces, external to the formal classroom, should become an extension of the overall learning experience. In particular, mobile devices can play a major part in facilitating this learning outside the classroom.

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mobile device to which he or she has access. What are these informal spaces? Universities and corporations are trying to identify those special areas and gathering spaces within (and beyond) their walls in an attempt to foster unscheduled collaboration, which often leads to some of the most valuable learning opportunities. Therefore, the collaboration infrastructure and tools supported within that infrastructure should be carefully selected to maximize these opportunities for spontaneous collaboration.

The Franklin Hall renovation represents a strategic focus on informal spaces. One prominent example: The building’s three-story atrium commons includes a 2.5mm pixel pitch/direct-view 23.6-foot by 12.6-foot LED video wall. Upon first glance, one might think this enormous display functions like the majority of large screens (albeit on a much bigger scale) commonly found in lobbies of any

In the Indiana University Media School lobby, a large display will showcase student work and provide interactive sessions.

Photo by Allen Major/The Media School @ Indiana University
The tools for video production have become user-friendly and many are seamlessly integrated into the learning management system — fostering a new form of collaboration that shifts the generation of content from the exclusive domain of the instructor to both the student and the instructor.

The Impact of Video
Innovations in classroom video technology — especially in the context of lecture capture — also enhance instructors’ ability to target specific content using sophisticated data analytics. For example, by analyzing trends in student views of specific video content, instructors can identify content that should be revisited in the classroom. While traditional one-way lecture capture provides recorded lecture videos to students, newer technologies also help expand the learning environment both in and outside the classroom. Moreover, the tools for video production have become user-friendly and many are seamlessly integrated into the learning management system — fostering a new form of collaboration that shifts the generation of content from the exclusive domain of the instructor to both the student and the instructor. The hurdles of the past — difficulty in manipulating large video files, lack of storage, bandwidth issues, affordability, ease of use and integration with the LMS — have been overcome.

Today’s instructors and students want to engage and immerse themselves in content. To meet this need, the focus now is on the “all-in-one” communications tools that provide extensive functionality but with an easy-to-use interface within the context of thoughtfully designed spaces. Spaces that intentionally design for this purpose will enhance and support the type of learner for the workplace of today and for the future.

Julie Johnston is the director of Learning Spaces for Indiana University.

This month at EduComm Expo 2016, Johnston presented the session “The New Collaboration — Video, Interactive, Mobile.” For more information, visit the EduComm Expo 2016 site.
OUTSOURCING I.T. IN HIGHER ED: A NECESSARY EVIL?

When an American company outsources work to an Indian firm, plenty of IT professionals bemoan how management is willing to bury middle-class jobs in pursuit of profits. But what if the organization doing the outsourcing is a public university?

BY DIAN SCHAFFHAUSER

NEWS THAT THE University of California, San Francisco plans to outsource many of its technology functions to an India-based service provider appears to have sparked a blaze of concern that soon the entire UC system could adopt the same contract. While offshoring opponents predict that the plan could set off a domino effect of other colleges and universities following suit, institutional leaders appear to view the UCSF move as an individual decision made for strategic reasons — no different, really, from choosing any kind of service delivery.
According to reporting by Computerworld, healthcare-focused UCSF is laying off some 17 percent of the institution’s 565-employee IT staff starting next February — after those same workers have presumably trained Indian replacements employed by HCL Technologies. Of the 96 positions being eliminated, just over half of the people facing layoffs are permanent employees. The remainder consists of contract employees, vendor contractors and vacant IT jobs that the university will stop trying to fill. Total savings for the five-year agreement with HCL, along with contracts the university already has with Dell and security company FireEye, is estimated at $30 million.

CIO Joe Bengfort blamed the cost-cutting maneuver on a ballooning IT operation whose operating expenses have doubled over the last five years — a result of the shift to electronic medical records and declining reimbursements. But Bill Balint, CIO at Indiana University of Pennsylvania, said the San Francisco work environment would probably drive any IT leader to consider outsourcing. “If you’re in a place where you have to pay high dollars to get and keep IT staff, and you don’t have a team of people that are coming and staying for 20 or 25 years, and you don’t have the funds to keep them up-to-date and current with emerging technologies, then maybe looking at third parties to provide at least a portion of [the work] could possibly get you better outcomes than staying with the traditional setup,” he observed.

He has a point. According to compensation site Salary Expert, the average salary of a network engineer in San Francisco is about $108,147. In Indiana, PA, where Balint’s institution is based, the same job earns 26 percent less — an average of $80,076.

On top of the salary disparity, many companies have become more generous in addressing work-life balance, which means IT hiring managers on campus have lost a major differentiator. It used to be that university work offered “a pension, benefits, regular work hours, very little chance of losing your job, a lot of vacation time, a short commute, a low cost of living,” said Balint. On top of that, “If somebody was place-bound, they might work for you for less money because they didn’t want to drive an hour and a half to some urban area,” he pointed out. “Now, because of telecommuting, that impediment isn’t as high as it was when I got into the industry.”

Then there’s just the general trend that IT service delivery is “undergoing a shift,” as a 2015 Educause report acknowledged. Whereas more CIOs “generally think” they’re still mired in “managing infrastructure and technical resources,” by 2025, the focus will be “primarily on managing vendors, services and outsourced contracts,” Educause researchers predicted. In other words, IT leaders anticipate that finding ways to shuck the work of touching hardware and software will become more common on their campuses, not less.

The same report shared data from a 2014 Educause Core Data Service survey of CIOs that found that about four in 10 institutions (44 percent) “have outsourced at least one non-cloud service,” a practice that varies little by school size. Yet spending on outsourcing was only about 2 percent of the total central IT spending. Much more common were the practices of moving services to the cloud and participating in purchasing consortia, both of which also indirectly lessen the need to employ IT professionals on campus but rarely generate headlines tied to job loss. —

― Bill Balint, Indiana University of Pennsylvania

“If you’re in a place where you have to pay high dollars to get and keep IT staff … and you don’t have the funds to keep them up-to-date and current with emerging technologies, then maybe looking at third parties to provide at least a portion of [the work] could possibly get you better outcomes.”
disadvantage: “You don’t get the customization. You don’t get some of the things that can be more innovative.”

Hoover has lived through outsourcing before. During a lengthy stint in IT at Pepperdine University (CA), he participated as the school outsourced its help desk to SunGard (now Ellucian). After three years, those services were brought back in house again.

The work being taken over by HCL at UCSF includes data center and network operations, along with unified communications; application maintenance for PeopleSoft, C#, .NET and Java; and “application development augmentation services.” Those kinds of services, especially managing infrastructure maintained in the data center, are among the “easier” ones to contract out, said Hoover. The university can set service level agreements “which can be measured for uptime and show whether it’s working or not.”

OUTSOURCING CAVEATS

If you’re thinking about outsourcing, “you really have to do your homework,” advised Thomas Hoover, associate vice chancellor and CIO at the University of Tennessee at Chattanooga. That means calling institutions that have gone forward with their plans and those that have backed away “to get some real facts.” He referenced a university in Los Angeles he’s familiar with that tried IT outsourcing and shifted gears when it didn’t work out: “It took a long time for them to get that credibility back. You’ve really got to do your due diligence before you make a decision like that.”

Indiana University of Pennsylvania CIO Bill Balint pointed out that although outsourcing contracts may provide for predictable costs, those go out the window when something needs revision. The same is true, he noted, for managed or cloud services. Going off plan requires “a change order to the contract. But if you have your own staff, you can say, ‘Hey, we’re hurting for money this year. We’re not going to buy that storage. We’re going to delay that for a year so we can take that money and put it into another need.’”

User expectations will also determine how well received outsourcing is, suggested Balint. For example, his university has always “invested heavily in application development and engineering. For a mid-size public institution like ours, our percentage of FTE staff that works in that area is probably very high.” As a result, users are accustomed to being able to order the “Rolls Royce model” for their solutions, he said. “That’s the way it’s been all 27 years I’ve worked here.” The benefit is that his IT organization is “like a Lego set.” As the priorities change, “We can redeploy people however we need to.”
mentation of “performance-based funding.” After a base amount is set aside for operational support, the remainder of state funding is issued to colleges and universities based on their institutional outcomes.

Or, as Hoover puts it, “We are paid not by how many people have their bottoms in the seats during class. We’re paid for how many bottoms are in the seats for graduation. In the end it’s all about how many students graduate. And when your network uptime is this and your students are able to access your resources, that helps graduation [rates].”

As a result, he added, “We’re much more outcomes-based.” That means measuring as much as possible: how many support tickets have been closed, how many project hours have been worked, how much value has been added. “It’s no longer enough to say that it is doing a great job,” said Hoover. Now, it has to prove it with data. “It is definitely going to change or be changed,” he warned. Otherwise, more institutions will try outsourcing, “because they can get much better performance than somebody who just doesn’t get it.”

Balint believes that reduced IT budgets are inevitable. “It’s gotten to the place where no matter how good and how much value you add, you have to find a way to bend the cost curve in higher ed.” For that reason, he explained, diversity of delivery — not just outsourcing per se — is the trend. “I think you’ll see increasing diversity in the way IT is leveraged. More consortia. More private and public cloud. More people doubling down and saying, ‘We’re going to outsource everything but we’re going to get really involved in data analytics or data modeling or whatever can help decision support. And we’re going to put our A-list on there, and that’s going to be a high expenditure area for us.’ I think you’re going to see a lot of that.”

Dian Schaffhauser is a senior contributing editor for Campus Technology.
An Open Repository of Learning Space Design

The cross-institutional FLEXspace team created a global forum for sharing examples of technology-enhanced learning environments and their impact on teaching and learning.

IN 2012, the State University of New York was looking for a way to more effectively share information about classroom building and renovation across its 64-campus system. Its vision: a collaborative repository with images and relevant information about examples of learning spaces on campuses across the country. A team quickly began building a proof-of-concept solution that would enable faculty, instructional technologists and facilities planners to share media assets in a structured way.
The Flexible Learning Environments eXchange (FLEXspace) was born out of that initial work at SUNY. And thanks to the support of a cross-institutional team of core contributors — including representatives from California State University, Foothill DeAnza and California Community Colleges, the Consortium of College and University Media Centers, InfoComm, the Society for College and University Planning, Educause Learning Initiative and Crestron — the effort grew into a highly searchable, peer-reviewed repository of technology-enhanced learning spaces, freely available to the higher ed community. FLEXspace has since been expanding its mission and services to address the need for extensive global conversations on learning impacts and to provide other, new formats for productive information exchange.

FLEXspace uses the Artstor Shared Shelf platform to create its open education resource and share it with the higher education community. The online repository focuses on innovation, design and technology, providing extensive examples and high-end photos and illustrations as well as descriptive information and data. Shared Shelf provides a highly accessible, trusted environment that safely and securely stores institutional data, and contributions will remain intact and available in FLEXspace for the long term.

A user begins by accessing the public-facing FLEXspace website, which describes each project. He or she can then access either the upload functionality (sharing examples of institutional solutions via Artstor’s Shared Shelf) or the viewing portal (accessing video, images and data from the FLEXspace collection).

Ultimately, FLEXspace, used in conjunction with other resources like the Learning Space Rating System, will not only promote understanding of other institutions’ efforts, but also assist individual campus stakeholders in creating master learning space plans.

SUNY Academic Innovation, University at Buffalo, reflected, “FLEXspace, particularly when coupled with the Learning Space Rating System, is envisioned to be not only an infrastructure or facilities planning tool, but ultimately a forum for learning space designers and builders, as well as faculty using these flexible learning spaces, to engage in global conversations about how space and environment impact learning effectiveness.”

**LEARN MORE**

Don’t miss “FLEXspace: Sharing the Best of Learning Space Design,” an in-depth interview with project lead Lisa Stephens and Rebecca Frazee, FLEXspace manager and lecturer for the Learning Design and Technology program at San Diego State University.

**Ultimatey, FLEXspace, used in conjunction with other resources like the Learning Space Rating System, will not only promote understanding of other institutions’ efforts, but also assist individual campus stakeholders in creating master learning space plans.**

**Meg Lloyd** is a freelance writer based in Northern California.
A Location-Aware App for Exploring the Library

To help users access rich information resources on campus, the University of Oklahoma Libraries created a mobile app with location-based navigation and “hyperlocal” content.

Category: Education Futurists
Institution: University of Oklahoma
Project: OU Libraries NavApp
Project lead: Matt Cook, emerging technologies librarian
Tech lineup: Aruba, Meridian, RFIP

LIBRARY FACILITIES can be notoriously complicated to navigate, and the University of Oklahoma’s library is no different. “It’s an intimidating building, especially for first-time users, which include many of our incoming freshmen, and it’s a bit obscure. The resources and services are not immediately apparent when you walk in the front door,” said Emerging Technologies Librarian Matt Cook, speaking last August when OU launched NavApp, a new mobile app that provides turn-by-turn directions, location-based information and educational content to help students, faculty and visitors find their way through the university’s seven-floor, 400,000-square-foot library system.

The development of OU Libraries NavApp began in early 2015, when the university resolved to put an end to the intimidation factor that visitors and new students feel when visiting the library for the first time. The goal: to create a smartphone app that would guide the user by sensing his or her physical location, and reveal content resources in the user’s proximity. NavApp does just that, combining indoor Bluetooth beacons and outdoor GPS to guide users through large indoor environments while providing a plethora of location-based info and relevant push notifications about events, exhibit details, tutorials and more.

It was not long before the successful deployment of OU Libraries NavApp paved the way for a system-wide rollout...
OU NavApp now vastly enhances the experience of exploring the campus by providing visually rich content tied to the user’s location — allowing the user to make a deeper examination of resources and exhibits.

Cook, project lead for the OU Libraries NavApp, explained the importance of providing rich content tied to the location-sensitive application: “It’s not just navigation — it’s content tied to a location; what I call hyperlocal content. As a simple example, once you get to a resource, such as a printer-copier, you may access tutorials or video guides on how to use it. What we hope to accomplish first and foremost is the unification of the digital and physical campus: We can overlay digital resources on top of a physical location. So, instead of forcing users to navigate a large or complex website, they simply get the content that they are looking for because they are standing at a certain location.”

The NavApp is powered by Meridian, which is a subsidiary of Aruba Networks, a Hewlett Packard Enterprise company. Bluetooth beacons piggyback on both the existing network infrastructure (RFIP outdoors) and the location services of the individual’s smartphone. By overlaying digital representations of building schematics with a corresponding set of “chirping” Bluetooth beacons, OU NavApp can locate users with up to a meter of accuracy both indoors and out.

Behind the scenes, OU Libraries NavApp offers administrators, department directors and program managers detailed information to precisely track usage of exhibits, service desks, digital resources, study rooms and more. Key stakeholders are collaborating on the expansion of services and features. OU Libraries staff members plan to build on partnerships around campus and work closely with central campus IT to integrate functionality into the primary campus app or build out a fully customized campus NavApp where needed. New features like catalog searches and emergency notifications have been requested by both users and administrators. The combination of strong user engagement and detailed usage data is providing much-needed background for program planning and the growth of the NavApp on campus.

Meg Lloyd is a freelance writer based in Northern California.
Do-It-Yourself Accessibility

The University of Central Florida’s Universal Design Online Content Inspection Tool evaluates online course content for accessibility issues, allowing instructors to find and address potential problems.

One of the nagging issues with online course content is accessibility. There is clearly a universal need for making content accessible, but few course creators have the time, resources or expertise to make it happen.

To bridge that gap, the University of Central Florida built an open source tool that helps faculty discover and repair accessibility issues in their online courses. The Universal Design Online Content Inspection Tool, or UDOIT (pronounced “You do it”), scans course content within the institution’s Canvas learning management system and identifies potential problems. Items on the accessibility checklist include appropriate use of headings in page structure, alternative text for images, table headers, color contrast and video captions. Some errors or suggestions even come with a “UFIXIT” feature, which allows the instructor to correct the accessibility issue right there, on the spot, from within UDOIT.

All results are compiled and presented to the instructor in an outlined report format that can be expanded/contracted for readability. The ability to view online content, including links to external documents, all within one UDOIT report has made the accessibility review process notably easier and more expedient for all who use it.

UDOIT is LTI (Learning Tools Interoperability)-compliant and is designed for use by instructors and others who work directly on maintaining a course and are interested in maintaining universal accessibility. Rather than relying on IT or disability services personnel to address accessibility, UDOIT shifts the work to the faculty.
member, who is the one in the best position to determine the most appropriate fix — or what alternative content might be used in place of something with clear accessibility issues.

More accessible online courses benefit all students, but especially those with disabilities who need support to access online content. Because UDOIT uncovers possible accessibility issues that were previously unknown, the tool has the potential to raise general awareness of online accessibility. Also, it empowers instructors to repair problems themselves and avoid accessibility issues in the future, reducing the workload on the instructional design team and decreasing the lead time for accessibility accommodations.

A major goal for the UDOIT team is to promote community involvement in the project. In addition to a GitHub repository, the team has formed a user group within the Canvas Community as well as created a website with additional information for those who desire to move forward with potentially installing UDOIT.

UCF Techrangers Team Lead (and UDOIT project lead) Jacob Bates commented on the future for UDOIT and on its open source status: “UCF is taking the role as the visionary for UDOIT. But an open source project needs people and other institutions to contribute to it. We hope in the future that our community will be strong enough that we can get a consensus where they want to go with UDOIT.”

Meg Lloyd is a freelance writer based in Northern California.

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The Internet of Things (IoT) has started a new wave of connectedness. We have been able to connect certain common devices to the internet that simply weren’t there before and discover new ways to interact with them. The ability to connect to — and obtain data from — the real and physical world over the internet has amazed and inspired us.

Now, as we move further into the IoT, we are seeing that the technology has simply gotten better. From wearables and smart objects and environments to sensor networks and more, our choices are increasing exponentially.

And with all the advancements and innovations, an awareness of the larger implications of connectedness has hit us: now, we are beginning to talk about the internet of Everything (IoE). We’ll be tapping into big data from diverse sources, often outside our institutions as well as within, to help us make decisions in real time. Soon, it seems we will be able to consult nearly everything to decide anything.

But how can our institutions leverage these offerings in a way that supports and deepens higher education’s own enduring values? CT asked Robbie Melton, associate vice chancellor for mobile and emerging technologies at the Tennessee Board of Regents, for some advice and insight for higher education institutions as they explore — and hopefully benefit from — the unique applications of the IoT and IoE in education.

CT: In your role at TBR, what are some of the things you’ve been looking at in the IoT and IoE?

Melton: We have been looking at the IoT for well over four years now. This came naturally out of our work with mobile devices. We started by connecting through our networks to our laptops, smartphones, tablets, fitness trackers and watches, and we realized, “Wow, we are pulling data from all of these sources — what can the possibilities be for teaching, learning and workforce training?”

We’ve looked at learning analytics and real-time data, and, together with fac-
C-Level View

ulty, administration and staff throughout Tennessee, we have envisioned real-time solutions with IoT — and of course now, with IoE. So, from that jumping off point of working with the hardware and the connectivity, we have been pondering what we can do for education and the workforce.

CT: What are some of the successful applications you were able to demonstrate?

Melton: I’ll give you a simple example relating to student activity. Looking at connectivity and use of student-connected mobile devices, we found through our data that students at one college were more active and participated more on Monday through Thursday, and less on Friday. We were able to determine this much more quickly using our mobile data than we would have through more traditional observations, and we were able to make the change to a four-day week sooner — we didn’t have to wait until the end of the academic year to make helpful changes.

Another example is related to textbooks. When we were using traditional hard-bound and paperback books, it was very difficult to gauge where, when and what students were reading in the course material, as well as what content was being skipped. And it was hard to find out, without testing, which concepts were not being understood by the students. With our ability to track and monitor electronic textbook usage, we can get data on these things in real time. This not only helps inform and improve the teaching and learning process, but it also helps us to utilize our resources in much more efficient ways. One of the benefits of this is that we now can purchase just selected chapters and content from books versus having students pay for the entire book.

CT: Are there different levels of use of the IoE, such as faculty versus administrators? And are there differences in how IoE is used by discipline?

Melton: As an administrator, using the IoE, you are looking at a holistic view of the entire campus operations — networks, teaching, learning and services. You are not usually looking so much at a particular course — you are concerned with a whole program in regard to its alignment with student performance, retention, health and safety. For example, one of our campuses noticed an increase in calls regarding safety and security issues. So, the administrator pulled data (on demand and now in real time through IoE) from not only internal cameras, but from external community surveillance sensors, law enforcement data and other connected sources, including campus mobile devices, that could help provide insight as to the “what,” “when” and “where” of incidents and how campus security systems and safety procedures were working, or not working well, overall or in selected areas on the campus.

A faculty member using the IoE would more likely be concentrating on the lesson at hand and on what specifically is going on in their classroom — especially in the areas of student engagement, performance, retention and outcomes. An example from a science lab showed us how the instructor could monitor lab use with IoE applications, both to track and improve student learning and to keep up on supplies.

And yes, there are differences in how these technologies are being embraced and utilized in the disciplines. The STEM programs (science, technology, engineering and math) are at the top in terms of adoption, with the medical field being an early adopter. I’ll give you an example from a physical therapy lab, where there are IoE wearables such as smart shoes, clothes and sensored adaptive devices. There are even innovative sensored therapy floors now that can share data on how, when and where clients are walking — allowing therapists to track progress with their therapy. So, therapists and their student interns can identify problems quickly, using real-time data from these smart floors and wearable medical devices.

There are even innovative sensored therapy floors now that can share data on how, when and where clients are walking — allowing therapists to track progress with their therapy. So, therapists and their student interns can identify problems quickly, using real-time data from these smart floors and wearable medical devices. Also in the medical field, we were fortu-
nate to have helped evaluate and pilot several of the first smartphone and mobile phone-based blood pressure cups — not merely adopting the technology for use on our campuses, but providing a test bed and feedback for the technology’s development and validity out in the field.

I can add that even my own shoes, clothes, smartphones, earphones and my watch are now keeping track of my follow-through on commitments I’ve made to exercise, getting fit and eating healthy — when I don’t keep it up, my shoes and devices will send a message to my phone to get up and get moving!

I’ll give you an intriguing example from physical education: I have a smart basketball. It will coach me by talking me through what I need to do to improve my techniques. And when the ball is communicating with me, it is also letting the instructor know how I am doing in real time, so my human coach can immediately intervene.

Safety and security are definitely to be added high on the list of disciplines incorporating IoT, along with business and marketing, which are investigating the wealth of IoT possibilities. Have you noticed that when you drive past certain businesses your smartphone will display their logo and products, as well as update your recent purchases?

Agriculture and environmental science gave us another interesting example of the utilization of IoT. Our State Ag departments were consulted on a growing problem with wild hogs. These animals had to be captured and managed, usually during the middle of the night. Consulting with Verizon Wireless IoT Connectivity Solutions, Ag agents in the field are now using a “smart fencing system” that is able to track and help contain these creatures remotely without needing on-site staff at 2:00 a.m.

CT: Do some of these devices have dashboards for the instructors?

Melton: Yes, certainly. For example, we are piloting a digital tool called NearPod. This allows the instructor to connect to every device in the classroom — even to several different platforms and types of devices — as well as interact with students at any remote location. An instructor can use the dashboard to send communications and to deliver content to all the students’ devices and to monitor student performance as needed. And remember, this is all happening in real time.

CT: How do you introduce these technologies or offer training that will help faculty, staff and administrators on campus?

Melton: First, we provide professional development activities regarding the innovations and changes in technology — including emerging tools, new practices and knowledge concepts. We use terms, symbols and labels like “smart tools” or even “edugadgets” to convey that these are serious tools, not for entertainment or frivolous use, but for education and workforce training. We make faculty, staff and administrators aware of what’s out there and what’s coming. We offer showcases featuring what we call “Education and Workforce Smart Tools and Gadgets for IoT.” Seeing these things gives our constituents a fresh perspective so they can help us envision the possibilities for a given device. Very recent examples include our IoT showcases and pilots that use virtual reality, augmented reality and holograms to improve teaching, learning and workforce training.

Participants learn to consider: 1) What is the placement or who is the wearer of the smart device? 2) What kind of data can be gathered with this device? 3) How will you monitor and track the data? and 4) What are you going to do with the data — how can you use it to make effective changes?

So the full cycle is: We find emerging tech, we assess it, we pilot it, we evaluate the application of it and we share the outcomes and the impact of it. Then, after getting feedback and making the adjustments we need, only then do we enter the full institutional or classroom application phase.

CT: How are you able to demonstrate which devices are useful and worth an investment by state institutions — and which may not be, at least for now? On the surface, some of the devices you explore in your research could seem as though they might be too expensive or too exotic or just not ready or useful yet.

Melton: Consider the whole process again: First of all, TBR has invested in — not through a grant, but through its own
funding infrastructure — a system-wide office for emerging technologies. This office seeks out innovations and new technologies that have the potential and possibilities for improving teaching, learning and workforce training. The office provides a research center and testing ground for emerging technologies where campuses may “try out” before purchasing and “test out” for ADA standards.

Next, we introduce these tools to the faculty and administration. Every year we have a major emerging tech conference where they can peruse the latest and greatest, and we see what sparks their interest and which technologies will complement and support their programs and services. Then, we take these technologies to the campuses, and to the various education programs. We run pilots to track and monitor the impact of the technologies and get the feedback we need to modify them to optimize teaching and learning.

Finally, TBR as a system may choose to say, “Yes, this particular technology has the potential to be a game changer. Let’s investigate and invest more.” And that way, we identify both the very latest and the very best technologies for our institutions. This model has saved the TBR institutions from expensive, one-off efforts at individual schools or programs, reducing duplication and maximizing resources and efforts while offering a proof-of-concept approach that can ensure our institutions are getting the most innovative technologies — viable, productive education technologies that prepare our students for a technological world of work.
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The Software & Information Industry Association
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New York

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TransformingEDU Summit at CES 2017
Las Vegas

Jan. 8–11
Association for College and University Technology Advancement
ACUTA Winter Seminar
Orlando, FL

Jan. 25–28
Association of American Colleges & Universities 2017 Annual Meeting
San Francisco

Feb. 2–3
LearnLaunch Institute
LearnLaunch Across Boundaries Conference
Boston

Feb. 13–15
Educause Learning Initiative
ELI Annual Meeting 2017
Houston

Feb. 19–22
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eLearning 2017
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To submit your event, e-mail rkelly@1105media.com.

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