Why IT Matters to Higher Education

EDUCAUSE review

SEPTEMBER/OCTOBER 2017

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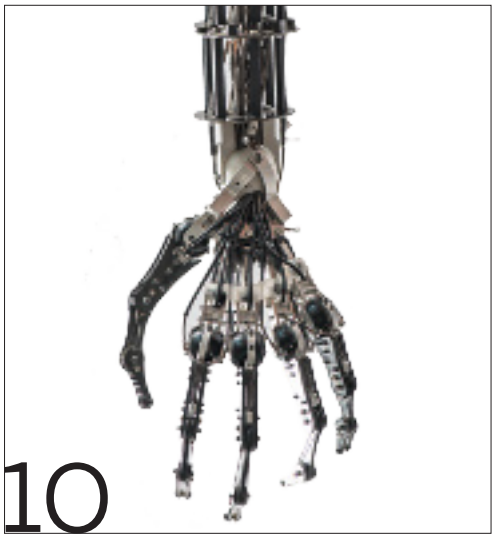
SEPTEMBER/OCTOBER 2017 VOLUME 52, NUMBER 5

FEATURES



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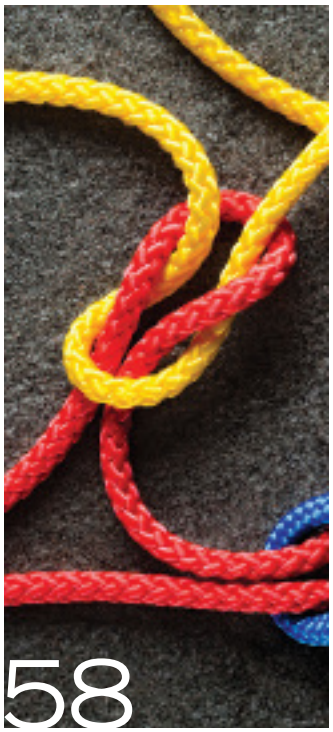

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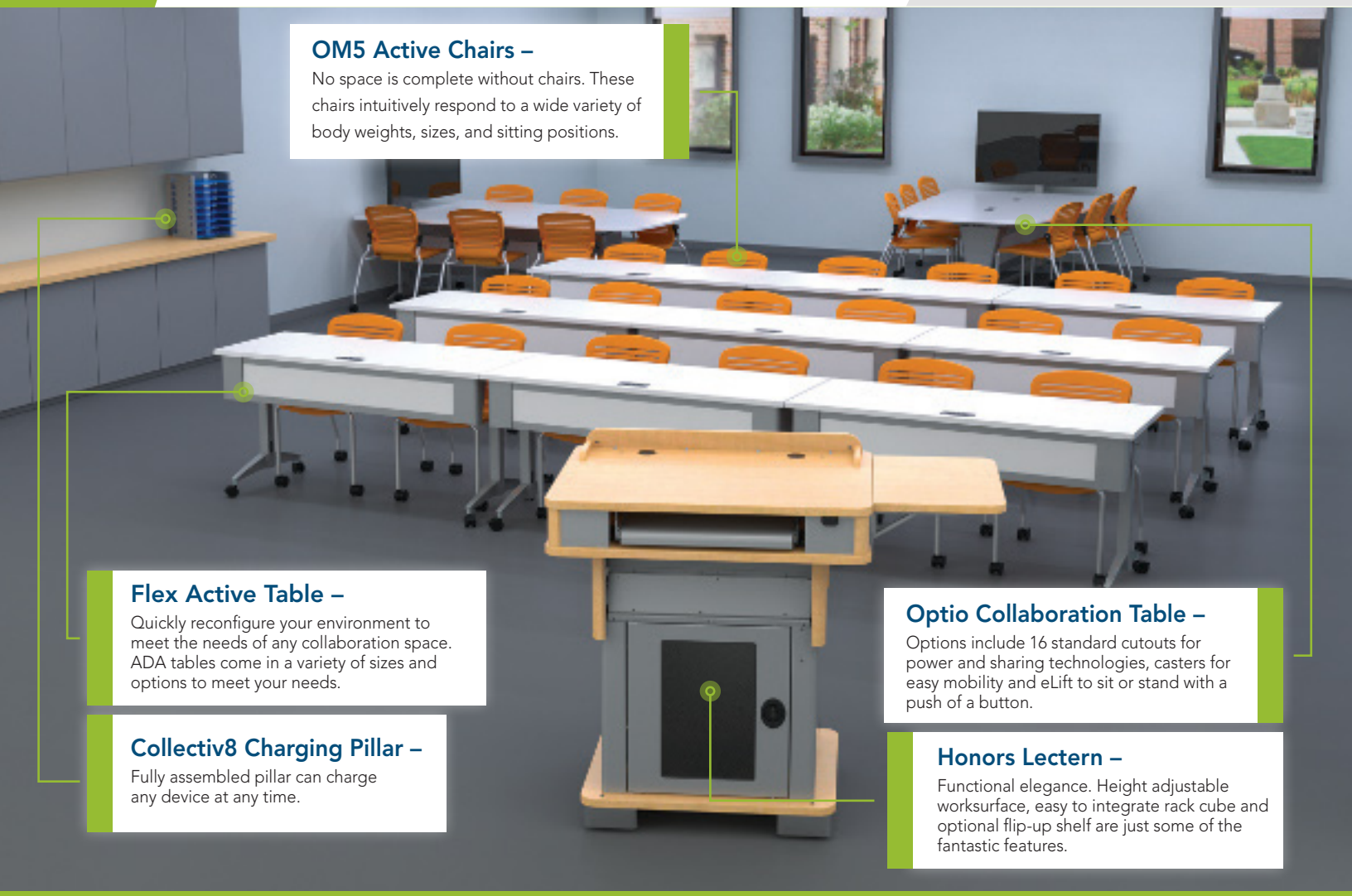

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By JOHN O'BRIEN

Another Fall Semester, Another School of Phish

The e-mail seemed harmless enough: a short note to the EDUCAUSE CFO, Stacy Ruwe, asking her to help me get a payment processed. It was all very friendly, first-name-basis stuff. Except that it was all a lie—a well-crafted one. If the e-mail was viewed on a cell phone, the clearly fishy address of the sender (ceo.mail@msver.com) was hidden from view. And this was the third phishing e-mail sent to Stacy from "me" that month.

It is frightening to imagine how easily one could be hooked, especially in the flurry of e-mail that comes with a new academic year. Gone are the almost nostalgic days of those "dear most beloved friend" e-mails from strangers offering millions of dollars for doing almost nothing. These amateurish attacks have been replaced with more sophisticated efforts to trick us into revealing our credentials, credit card information, or other personal data.

These attacks usually employ some sort of technical subterfuge as well, like a spoofed e-mail that appears to be from a trusted source. Ultimately, these types of scams are designed to steal money or deliver malware to your computer. Not only do these scams work, but their frequency seems to be increasing. The Anti-Phishing Working Group, a global consortium dedicated to fighting cybercrime, reported that the incidence of global phishing attacks increased by 65 percent from 2015 to 2016.[1] Perhaps the one life preserver we have for avoiding the wave of phishing attacks is that we can be trained to avoid the lure of the phishing e-mail.

From: "John P. O'Brien" <ceo.mail@msver.com>
Subject: Request For Wire Transfer
Date: May 25, 2017 at 1:03:26 PM EDT
To: <sruwe@educause.edu>

Hi Stacy,

I need you to process an international W/T to Hong Kong today, Please kindly get back to me with the details needed to process an overseas payment and the transfer charges.

Regards
John

The importance of throwing out a lifeline and training members of the institutional community in good cybersecurity practices cannot be emphasized enough. The Higher Education Information Security Council (HEISC) has identified phishing and social engineering as one of the biggest information security risks facing the community.[2] Research from EDUCAUSE shows that from 2005 to 2013, 47 percent of higher education data breaches had underlying "human element" causes, which perhaps could have been mitigated or even avoided with a comprehensive cybersecurity training and awareness program covering a number of different data and IT protection practices.[3]

The month of October offers an opportunity to spotlight the importance of cybersecurity training and awareness. October is National Cyber Security Awareness Month (NCSAM), a collaborative effort to ensure that everyone has the resources needed to stay safe online. NCSAM is spearheaded by the U.S. Department of Homeland Security and the National Cyber Security Alliance. As a NCSAM champion, EDUCAUSE—along with other organizations and institutions in the higher education information

(continued on page 6)

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(continued from page 4)

security community—participates in this annual campaign each October to expand cybersecurity awareness and education on campuses and around the globe.

Effective cybersecurity training and awareness is a key component of an institutional information security program. In 2015, U.S. institutions required cybersecurity training for approximately 75 percent of faculty and staff and for 1 in 4 students.[4] Support for this type of training also runs high in higher education: more than half of cybersecurity awareness and training professionals report sufficient executive support for awareness and training efforts.[5] Cybersecurity awareness and training helps institutional community members turn the tide and know the specific actions that they can take (or, more importantly, not take) to protect institutional data and IT systems. Whereas 75 percent training for faculty and staff is pretty good, the picture for the other 25 percent is not so promising.

The Annual Campus Security Awareness Campaign provides twelve different monthly cybersecurity awareness topics that can easily be integrated into campus communications.

Making cybersecurity awareness and training easy for the person providing the training, as well as effective for the people receiving the training, is a goal of the HEISC Awareness and Training Working Group. The practitioners in this working group understand the constraints of providing cybersecurity training and awareness in the higher education environment. They know, for instance, that higher education cybersecurity awareness and training programs are typically led by managers who attend to these responsibilities with only a fraction of an FTE and with budgets of less than $5,000. Ultimately, this means that cybersecurity awareness and training activities are conducted in an ad hoc manner, depending on the time and financial resources available to the training and awareness professional.[6]

To help combat the ebb and flow of time and resource constraints, the HEISC Awareness and Training Working Group has created an Annual Campus Security Awareness Campaign for institutional use, and campuses looking for materials to add to their security plan in the new academic year should give it serious consideration. The campaign is a framework designed to support information security professionals and IT communicators as they develop and enhance their own institutional cybersecurity training and awareness plans. The campaign provides twelve different monthly cybersecurity awareness topics that can easily be integrated into campus communications. Functioning like a "cybersecurity training in a box" resource, the ready-made content can be used by institutions to create a steady stream of cybersecurity awareness information for students, faculty, and staff.

This year, phishing-related topics were featured in February and April. Now, as we start another fall semester, is a great time to reacquaint ourselves with the resources available and to consider new actions to respond to the growing, evolving threat. These days, taking the bait involves one simple click. That's all that is needed to imperil your privacy—and that of your higher education institution as well.

Notes

1. Anti-Phishing Working Group, "Phishing Activity Trends Report: 4th Quarter 2016," February 23, 2017.
2. Joanna Grama and Valerie Vogel, "Information Security: Risky Business," *EDUCAUSE Review*, January 17, 2017.
3. Joanna Grama, *Just in Time Research: Data Breaches in Higher Education* (Louisville, CO: ECAR, May 2014): 30 percent of breaches studied were caused by unintended disclosure (e.g., posting sensitive information on a public website or sending e-mail to the wrong person); the other 17 percent of breaches were caused by lost, discarded, or stolen portable devices.
4. Joanna L. Grama and Leah Lang, *CDS Spotlight: Information Security*, ECAR Research Bulletin (Louisville, CO: EDUCAUSE, August 15, 2016).
5. "2017 EDUCAUSE Information Security Almanac," May 2017.
6. Joanna L. Grama and Eden Dahlstrom, *Higher Education Information Security Awareness Programs*, ECAR Research Bulletin (Louisville, CO: EDUCAUSE, August 8, 2016).

John O'Brien (jobrien@educause.edu) is President and CEO of EDUCAUSE.

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Essential Stops on Your Leadership Journey

Autumn brings a new semester—and the end of summer. Many of us travel in the summer to see sites and sights we've always hoped to visit. Michelin's Green Guides have helped tourists identify important cultural and scenic destinations. The Green Guides took me to many places I might otherwise have missed over the years, including Évora in Portugal, Jumièges Abbey in France, and the Marmolada mountain range in Italy. Their original rating system was beautifully concrete, suggesting destinations that are "worth the trip," "worth a detour," and "interesting."

Most of us in higher education information technology are on our own journey—to leadership. That journey can last for a lifetime or just for a project. Part of the EDUCAUSE mission is to help higher education IT professionals navigate this leadership journey. If we were to design our own Green Guide for EDUCAUSE, it would include a number of leadership destinations and stops that are always worth the trip.

Destination: EDUCAUSE Annual Conference

Some leadership opportunities at the EDUCAUSE Annual Conference require planning ahead; others can be serendipitous.

Reservations Required

Not at all coincidentally, two of the signature leadership experiences at the annual conference are named after EDUCAUSE past presidents. Each aspires to honor a particular leadership legacy. Diana Oblinger was a visionary EDUCAUSE leader who could see far into the future to identify emerging trends. The Diana G. Oblinger Innovation Forum has, in its first two years, explored the challenge of leading innovation within an institution while highlighting the technology trends that hold the greatest strategic implications for higher education. It gathers teams of both IT and non-IT leaders to learn about a particular innovation opportunity, such as student success, and how to advance that opportunity within their institutions. It takes place on Tuesday afternoon of the conference week.

The Hawkins Leadership Roundtable is named for EDUCAUSE's first president, Brian Hawkins, who left a legacy of strong commitment to leadership development, mentoring in the profession, and lifelong learning. This roundtable is a small-cohort mentoring program for new CIOs and individuals actively seeking their first CIO role. Each participant is provided with a personal mentor. Participants have the opportunity to gather with current CIOs several times during the annual conference week and participate in mentoring conversations that explore leadership topics such as strengthening personal leadership, influencing across the organization, and developing strategy. Relationships established during the Hawkins Leadership Roundtable can endure for years afterward.

CIO job seekers have a second mentoring opportunity at the annual conference. Next Generation Executive Search, which leads searches for many CIO jobs in higher education, provides pro bono résumé reviews and CIO interview coaching. More than a few EDUCAUSE CIOs have credited their first CIO job to this coaching, which is just one part of the CIO Experience at the annual conference.

CIOs aren't the only IT leaders in higher education, of course. CIOs depend on senior IT directors and deputy CIOs to oversee complex portfolios and key staff. The Senior Directors Seminar provides over eight hours of training, peer networking, and mentoring for these IT leaders.

Cultural Activities and Scenic Drives

Not everyone plans ahead. If you arrive at the annual conference without reservations, other leadership opportunities are well worth the trip. For example, a unique and highly valuable gathering of CIOs in higher education takes place on Tuesday of the conference week. The CIO Constituent Group meets at 3 p.m., drawing 100 or more CIOs from all kinds of institutions. It's a great opportunity to meet old friends, make new ones, and listen or contribute to conversations about the issues that are energizing CIOs.

The good news is that the CIO constituent group is only one of over 80 constituent groups that meet at the annual conference, allowing for numerous cultural activities. The conference app provides a guide to the times and locations of meetings for constituent groups such as women in IT, IT accessibility, young IT professionals, data governance and chief data officers, LBGTQIA in IT, research computing, privacy, health sciences, and many more. Constituent group meetings can help you meet smart colleagues from all over the world (more than 45 countries are represented at the conference), provide a venue to ask your questions and express your feelings, and give you essential insights to help you do your job that much better when you return to campus.

As any traveler knows, sometimes the most memorable encounters are those that aren't planned. More than one CIO is known to come to the conference every year and spend almost the entire time networking, taking a "scenic drive"

By SUSAN GRAJEK

through the hallways, EDUCAUSE Central, the CIO lounge, the exhibit hall, nearby restaurants, and other locations. Sitting in a heavily trafficked location can be a great way to run into colleagues and contacts, who will then introduce you to their colleagues. Before you know it, you've made several new connections with whom you can follow up after the conference.

Destination: EDUCAUSE Institute Programs

The EDUCAUSE Annual Conference has a little something for everyone at every stage of the leadership journey. But for concentrated leadership development, the ideal destination is the EDUCAUSE Institute, consisting of six programs for managers, CIOs/CISOs, and leaders interested in academic and learning technologies. These are held in the summer and spring.

Many EDUCAUSE members began their leadership journey attending EDUCAUSE management institutes and programs. The New IT Managers Program, for aspiring managers, and the Management Boot Camp, for current managers, are two-day workshops that focus on leadership at the manager level. The Management Institute is a more immersive, five-day program.

New and aspiring CIOs and CISOs can attend the EDUCAUSE Leadership Institute, a five-day program taught by experienced CIOs. This institute focuses on such essential leadership topics as creating a culture of innovation and nurturing emotional intelligence.

The Learning Technology Leadership Institute is another five-day program. It concentrates on developing aspiring leaders whose campus role involves the support and promotion of teaching and learning with technology.

Finally, the Leading Change Institute has been called "transformational" by many of its alumni, who join a network and form bonds that last for years afterward. The institute—a collaboration with the Council on Library and Information Resources (CLIR)—is five and one-half days and draws existing and aspiring IT and library leaders.

Are the EDUCAUSE Institute programs worth the trip? As one recent Leadership Institute attendee wrote:

> I absolutely loved this institute! It's easy to remain in my bubble at my university and skip these types of functions due to the insurmountable tasks on my plate; however, this program has afforded me a brief moment to pause, reflect, learn, and has put new wind in my sails. I really appreciate the interaction and insight from amazing faculty and peers.

Destination: Home

Often the greatest enjoyment from a trip comes afterward. That's when you have the opportunity to remember what you saw and think about its lasting impact. In sharing stories with friends, family, and fellow travelers, experienced travelers can help first-timers avoid costly mistakes and find the best times and places to visit. Likewise, experienced leaders discover that sharing their wisdom allows them to consolidate their knowledge and gain new insights. Serving as EDUCAUSE Institute faculty, presenting at and participating in EDUCAUSE meetings and working groups, and writing for *EDUCAUSE Review* are just a few ways to contribute to the higher education IT field.

EDUCAUSE offers destinations and stops for all leadership journeys and for both new and experienced "travelers" with varied interests. Consider where you are in your personal leadership journey and what kinds of leadership development would suit you best at this time. EDUCAUSE will meet you where you are, will help you navigate, and will continue to guide you throughout your travels. ■

Susan Grajek (sgrajek@educause.edu) is Vice President, Communities and Research, for EDUCAUSE.

The AI Revolution on Campus

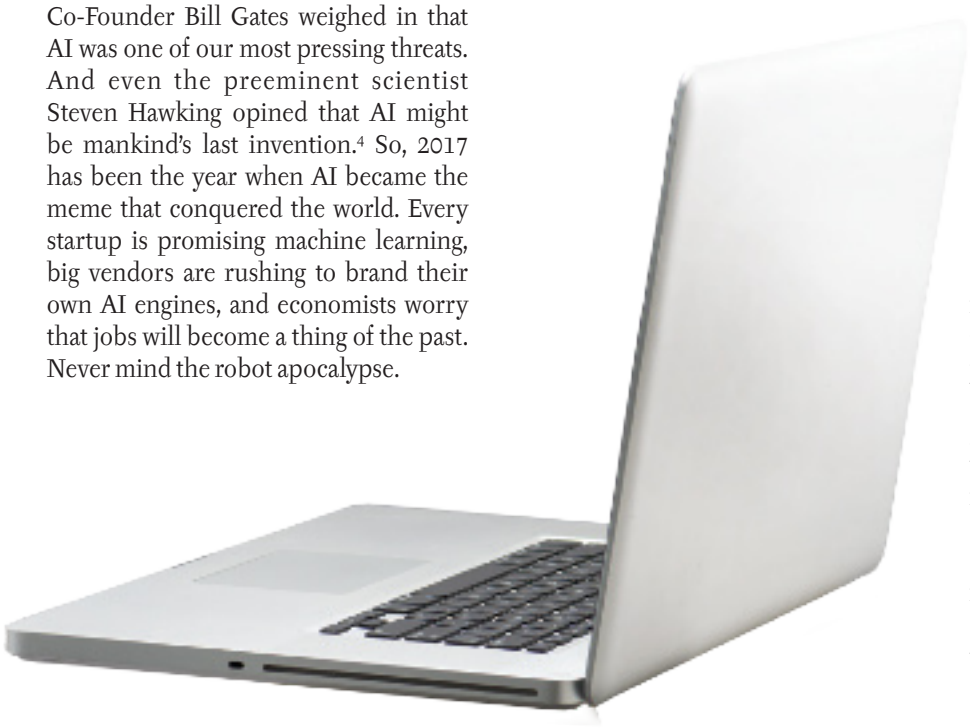
Michael King

The past several decades have seen tremendous change in technology. In 1984, Apple and IBM were fierce competitors, showcased by one famous Super Bowl ad.[1] The two companies were fighting a battle over the personal computer, a market that would see around two million devices sold that year.[2] And the biggest robotics story was a small-budget film called *The Terminator,* about a robot coming back in time to wipe out humanity and starring a relatively unknown Austrian actor. It would become one of the biggest box office hits of the year.

ILLUSTRATION BY ANN CUTTING, © 2017

Fast forward thirty-three years. Apple and IBM are now partners, collaborating on mobile applications and services for enterprise clients, and the technology industry is estimated to ship more than two billion devices in 2017.[3] In 2015, Arnold Schwarzenegger revitalized his post-gubernatorial career with a big-budget film called *Terminator Genisys*, about a robot coming back in time to wipe out humanity. The more things change, the more some things stay the same.

This year, the media hype has been all about robots and artificial intelligence (AI). Tesla CEO Elon Musk warned that AI could wipe out humanity. Microsoft Co-Founder Bill Gates weighed in that AI was one of our most pressing threats. And even the preeminent scientist Steven Hawking opined that AI might be mankind's last invention.[4] So, 2017 has been the year when AI became the meme that conquered the world. Every startup is promising machine learning, big vendors are rushing to brand their own AI engines, and economists worry that jobs will become a thing of the past. Never mind the robot apocalypse.



The reality of AI is both less dramatic and more impactful than the hype. We are entering a new era of computing that will bring tremendous change. The past thirty-plus years have seen the personalization of computing hardware, with single, big machines supplanted by supercomputers in everyone's pockets and on-demand cloud services. This technical advance has brought individuals access to services anytime, anywhere and has spurred major transformations on college and university campuses. In the new AI era, machine learning and big data, which together enable *cognitive computing*, will bring personalization through software to every corner of our economy. Higher education will play a critical role in how this new era of the economy evolves, and it's important that academy leaders understand the potential and the risks in order to develop a strategy for navigating the coming disruptions.

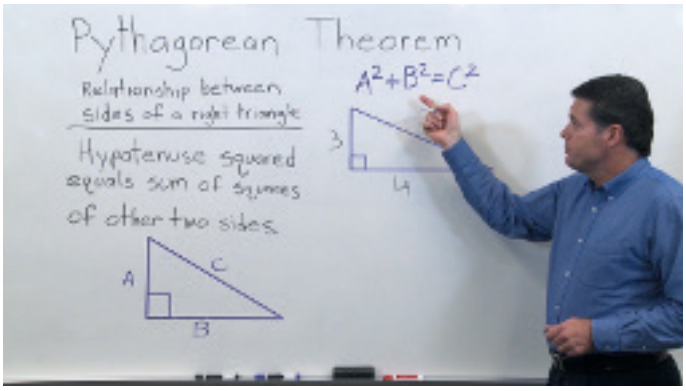
Computing 3.0

AI has been around for some time. IBM's Deep Blue computer captured media attention when it beat the reigning chess champion, Garry Kasparov, in a 1997 six-game match. At that time, the Deep Blue system won through sheer computational speed, essentially exploring 200 million chess positions per second to anticipate more moves ahead than Garry.[5] That power overcame the human competitor.

In 2011, IBM again staged a public competition, this time with two reigning champions of the *Jeopardy* television game show. The IBM computer, Watson, won the contest, showcasing the ability both to process natural language, with a dependency on context, and to rapidly search a massive database of facts to identify and rank answers. This new version of AI was built on large amounts of data, which is a key component of cognitive computing. Natural language interfaces and other tools use AI techniques to improve computer interactions. But it is big data that is the main enabler of the cognitive era.

The volume of data is growing dramatically around the world, with at least 90 percent of it having been created in just the past few years. There are billions of mobile devices and internet users, all generating massive amounts of interaction data. The Internet of Things and intelligent sensors will grow this number dramatically. Projections are that global data will increase by an order of magnitude by the end of this decade—to 44 zettabytes, or 44 trillion gigabytes. And the types of data that computers can process have evolved to include audio, text,

In the new AI era, machine learning and big data, which together enable *cognitive computing*, will bring personalization through software to every corner of our economy.



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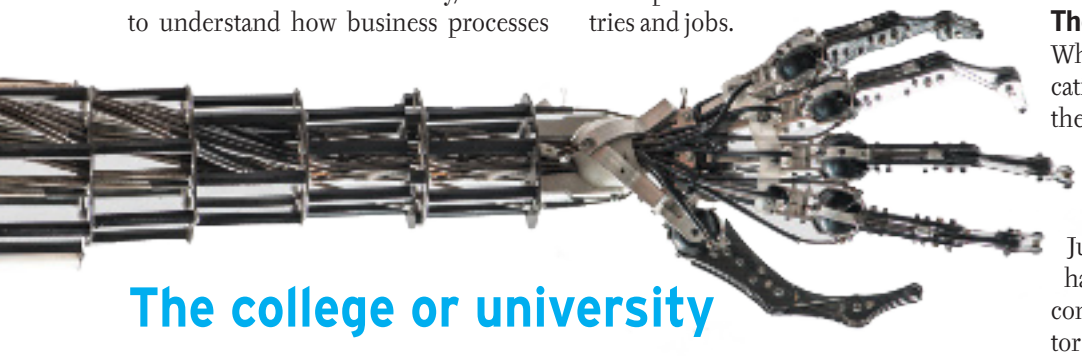
and other "unstructured" materials. This new unstructured material is estimated to represent 80 percent of all data.[6]

All this big data has been called "the next natural resource."[7] Machine learning is the key technology to refine this new resource into productivity. Tools like IBM Watson use large data sets not only to create insights but also to improve those insights through training. The systems continuously improve their accuracy based on new input data.

The new AI platforms use vast amounts of data, both structured and unstructured, to uncover hidden patterns for insight, but they can also create recommendations on next best actions. Using these data sets to find optimal pathways is how AI can impact a variety of business processes. To appreciate the influence of AI on the economy, we need to understand how business processes can be transformed through manipulating massive data sets, as well as how AI technology can make it easier for humans to access and act on these insights.

The use of AI and big data promises to personalize every service for every individual. AI is not a more clever human, and other than in new *Terminator* movie sequels, it is not going to lead to sentient robots that are a threat to humanity, as Musk, Gates, and Hawking fear. It will clearly impact most industries and many jobs, but threats of a jobless economy are also overwrought. Although the automated teller machine (ATM) was feared as a job killer for bank tellers in the mid-1980s, this has not been the case. As Charles Fishman pointed out in *Fast Company*: "At the dawn of the self-service banking age in 1985, for example, the United States had 60,000 automated teller machines and 485,000 bank tellers. In 2002, the United States had 352,000 ATMs—and 527,000 bank tellers. ATMs notwithstanding, banks do a lot more than they used to and have a lot more branches than they used to."[8] While some jobs may become obsolete, it is the impact of personalization that will reshape industries and jobs.



The college or university will need to become a *cognitive campus*. The age of hyper-personalization will continue to pressure institutions to meet rising demands.

IBM's first commercial offering with Watson was an oncology advisor for physicians. This "cognitive advisor" used machine learning and big data sets—including patient genomic data, patient cohort data, and even research publications—to make recommendations for individual treatment plans. This level of personalization holds promise for improving patients' outcomes but can also immediately save time for the physician. Watson doesn't replace the physician, but it offers recommendations for action, along with direct links to supporting data.

Cognitive assistants use big data and AI to provide personalized recommendations to professionals or consumers. Other applications include financial advisors that develop investment recommendations. Charles Schwab uses machine learning and large data sets to provide "intelligent portfolio" allocations. H&R Block partnered with IBM to use Watson to streamline and review the tax-preparation process. AI tools are also being integrated directly into business processes, such as security and supply chain management.

The Cognitive Campus

What is the significance for higher education? These developments mean that the college or university will need to become a *cognitive campus*. Consumer expectations will continue to evolve based on new personalized services. Just as higher education institutions had to embrace personal and mobile computing to serve students and educators, they will need to develop deeper personalized services in the AI era. Students and other constituents will request more personalization as their other service providers get to "know them." The age of hyper-personalization will continue to pressure institutions to meet rising demands in learning and support services.

Second, AI will create opportunities for cost reduction and administrative efficiency, just as in any other industry. Today, AI and big data can improve IT security on campus by identifying threats earlier and creating more rapid interventions. Institutions will deploy AI tools across the student life-cycle, improving retention and optimizing outcomes, which frequently have a bottom-line effect on costs.

But the most important issue for higher education is to prepare the next

What Your Cloud is Missing

Productivity Enhancements That Make Cloud Storage More Efficient

By John Glavin, CTO
South River Technologies

In recent years, the cloud has revolutionized many aspects of college life. Tasks such as submitting papers and receiving assignments can be done by utilizing one of the many cloud services available. Receiving student financial aid forms and housing requests can be done with the click of a mouse. However, with the growing number of cloud advancements comes some familiar problems. Students have hard drives that are inundated with unnecessary files, while IT support struggles to stay efficient, and overworked staff wants convenience and security.

Too Much of a Good Thing?

Research libraries are an excellent use of cloud resources, moving vast data repositories off of University-maintained servers and into the cloud. For students and professors, accessing these large repositories can mean syncing volumes of data to their laptops. This can quickly exceed the storage capacity of the average PC, making simple cloud access unmanageable.

This can be resolved by enabling selective syncing, but that often requires IT staff time, as students may need help with setup. In some cloud services, selectively keeping offline copies of files is not even an option.

When research libraries are maintained on University servers, there are still myriad challenges. Students may connect using a variety of secure file access clients, which the IT staff will need to support. Troubleshooting connectivity problems can be a time-consuming task. Additionally, collaborative access must be considered: ensuring that secure protocols are used for access and transfer, and that file locking protects against multiple editors overwriting each other's changes.

Staff Productivity Struggles

During the busy admissions season, it is critical that staff maintain maximum productivity. Easy and secure access to housing forms, admission applications, and financial aid documents is critical to moving the enrollment process forward. Cumbersome interfaces to multiple systems can create unnecessary delays. Whether these critical documents are stored in the cloud or on local servers, a single, unified interface to access needed files can reduce staff frustrations and improve productivity during critical periods of high volume.

Getting Personal

As the amount of cloud storage options increases, people are progressively using more than one service. The average user is running applications in 1.8 public clouds and 2.3 private clouds, according to the RightScale 2017 State of the Cloud Report. This is a growing issue for faculty, staff and students.

Multiple cloud services require users to navigate different interfaces and remember different passwords. This spans the self-managed, personal use as well as the business and educational use of cloud services. A consolidated interface to all cloud services gives the user an access point to all of the files that they need.

Put the Cloud on Your Desktop

The solution to this problem is finding a tool that can help to manage remote files efficiently. This can be done by using a technology to map a network drive to on-premise and cloud file servers. While several tools are available, support of secure protocols and file-locking are important criteria to consider. A tool frequently used in higher education is WebDrive. By mapping a unique drive letter to each cloud service or local server, a user's desktop applications can be used to edit and save files in the cloud.

WebDrive does not require syncing files locally, and an advanced caching system facilitates quick access without wasting hard drive resources. IT staff can create multiple pre-configured installers that can be distributed to different user groups, reducing the need for IT support to assist faculty, staff and students with configuration.

"WebDrive allows our patrons to securely access their files in the desktop environment they are already accustomed to working in. It has been very popular with our students," says Brian Luper from Rutgers University.

WebDrive is used at more than 200 universities in 15 countries.

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generation to prosper in an AI-driven economy. A persistent debate is whether higher education should focus on preparing students for citizenship or for the workforce. The answer is both. With increasing competition and new alternatives, institutions must align to workforce needs and ensure that their students gain employment. The accelerating rate of change in industry will require institutions to be far more adaptable in the future. That pace of change will make the idea of "lifelong learning" truly an imperative for the individual. In addition, the broad impact of AI on society reinforces the need for higher education to address questions of equity, ethics, and citizenship. Students should be asking themselves: "How should my personal data be used without my knowledge? Should it be? What do AI algorithms do for me? What are their limits?" As AI systems work their way across the economy, we will need a workforce *and* a citizenry that is deeply familiar with the technology, its capability, and the social issues it creates. We should view this familiarity as a requirement not only for those steeped in the technology but for everyone.

To prepare for this future, colleges and universities must not only teach about cognitive computing but also teach with it. Those higher education institutions that lead the adoption of cognitive computing will familiarize themselves with the issues and approaches while insulating themselves from increased competition and new entrants. These technologies can be disruptive, and they require a level of enterprise-wide investment not typically seen in classroom-centered initiatives. To succeed, academic leaders must partner with frontline educators to drive an institutional effort.

Understanding where cognitive computing is currently affecting institutions can help chart this course. Early projects point toward three major areas of transforming the student experience. First, AI can have an impact in the classroom, improving the experience for both educators and students. Second, cognitive computing can extend outside the classroom and across the campus to improve student engagement and persistence. Finally, big data, particularly unstructured materials, can support career coaching to help learners adapt to changing workforce needs throughout their lives.

The broad impact of AI on society reinforces the need for higher education to address questions of equity, ethics, and citizenship.

One of the most publicized tools for classroom AI has been "Jill Watson," a teaching assistant developed by Ashok Goel and his team at Georgia Tech University. Jill was created to help manage the volume of questions in his AI course. Many students were surprised when Goel revealed that "Jill" was not an actual person but was a chatbot built on IBM Watson. Given that the average faculty member deals with 10,000 queries in a large course deployment, the advantage for faculty is clear. And students benefit from a more responsive course experience.[9]

Other AI tools, such as Declara, are using machine learning to create personalized learning pathways. AI tools can rapidly identify and organize content, then couple it with individual learner insights to create custom pathways or interventions. This can support instructors' tools or direct student engagement. McGraw-Hill Education's Assessment and Learning in Knowledge Spaces (ALEKS) uses AI to measure the success of students and present specific content that a student is most ready to learn. ALEKS has been used by millions of students across several subjects.

In October 2016, Pearson announced a partnership with IBM to develop an intelligent tutor using Watson.[10] The tutor will expand Pearson's REVEL learning platform, using Watson to build an adaptive learning experience. The tutor acts as a personal assistant to students during study and quizzes. When students need help, they can ask the tutor questions and get answers or hints. The tutor will also prompt students to review key learning objectives. Based on students' answers, the tutor assesses the skill mastery level and conducts more conversations to bridge any gaps.

Cognitive computing is also being used across the campus. In April 2016, Campus Management released Retention360, which includes an AI persona. "RENEE" (named for Retain, Engage, Notify, and Enablement Engine) automatically launches interventions based on student profiles, best practices, and other inputs. Another company, the technology startup AdmitHub, uses AI chatbots as "campus coaches" for students. A partnership with AdmitHub at Georgia State University demonstrated significant improvement in incoming student metrics.[11]

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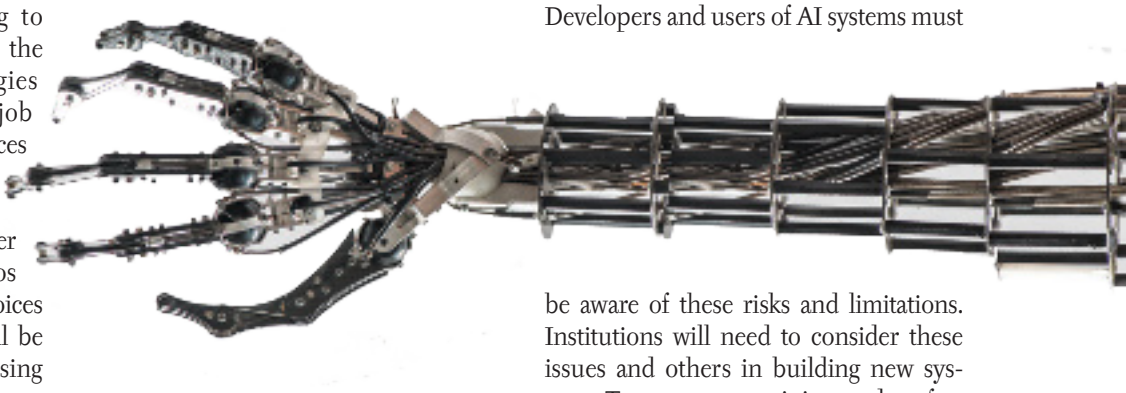
One of the most exciting areas in cognitive computing is career tools that help students create personal aspirations and bring clarity to the pathways to achieve those goals. Many states and institutions are building tools and pathway programs to help students navigate to careers. Georgia has been a leader in this area through its College and Career Clusters/Pathways program. This program provides tools and published paths to support institutions in offering guidance to students. In the future, these pathways can become data sets to enable AI-based coaching tools. Students will have tools that provide customized insights and recommendations to help them explore and pursue their career goals.

Various services are emerging to address this important segment of the market. Burning Glass Technologies provides a real-time database of job market data, along with analytic services to support decision making. Road-trip Nation has developed a broad library of video interviews on the career paths of different individuals, videos that can help personalize career choices for students and job-seekers. AI will be able to personalize the career-advising experience for students, leveraging services such as these and others to provide ongoing interactions on students' chosen paths.

MARi is one such tool already in the market. It is a personal learning platform that creates pathways to careers and jobs, based on individuals' skills and credentials. It functions like a "Career GPS," helping users navigate from their current skill set through a series of educational experiences and on to their stated job goal.

IBM is piloting a Watson career advisor internally to support employees on possible next steps and suggested experiences to prepare. The MyCA tool, or My Career Advisor, makes use of job skills information, work experience, and personality insights to help employees manage their careers. Early feedback is that employees in a place as big as IBM generally feel overwhelmed by options but that the MyCA tool helps sort those options and provide reasonable next steps. The tool should be able to answer the question of where individuals can go next to build their skills, so that they can stay relevant to their employer. Most students would agree that career options can be overwhelming, so this technology should be valuable not just to employees but also to learners at all stages of career preparation.

None of these technologies will replace human educators. Humans excel at nurturing common sense, imagination, and compassion, whereas computers excel at finding knowledge, computation, and pattern recognition. Just as in most commercial industry applications of AI, educational applications will find their strongest use as "Augmented Intelligence"— that is, personalizing the educational experience and augmenting the role of the frontline professional. I travel all over the world, meeting people at all stages of their careers. One common theme I hear is the story of a key person who inspired a love of learning, nurtured personal confidence, and helped chart a path to success. No computing system is anywhere near to replacing that critical role. AI will help students learn key concepts, will encourage them along their path, and will personalize instructor and institutional support. Both the institution and the instructor retain a critical role in students' education.



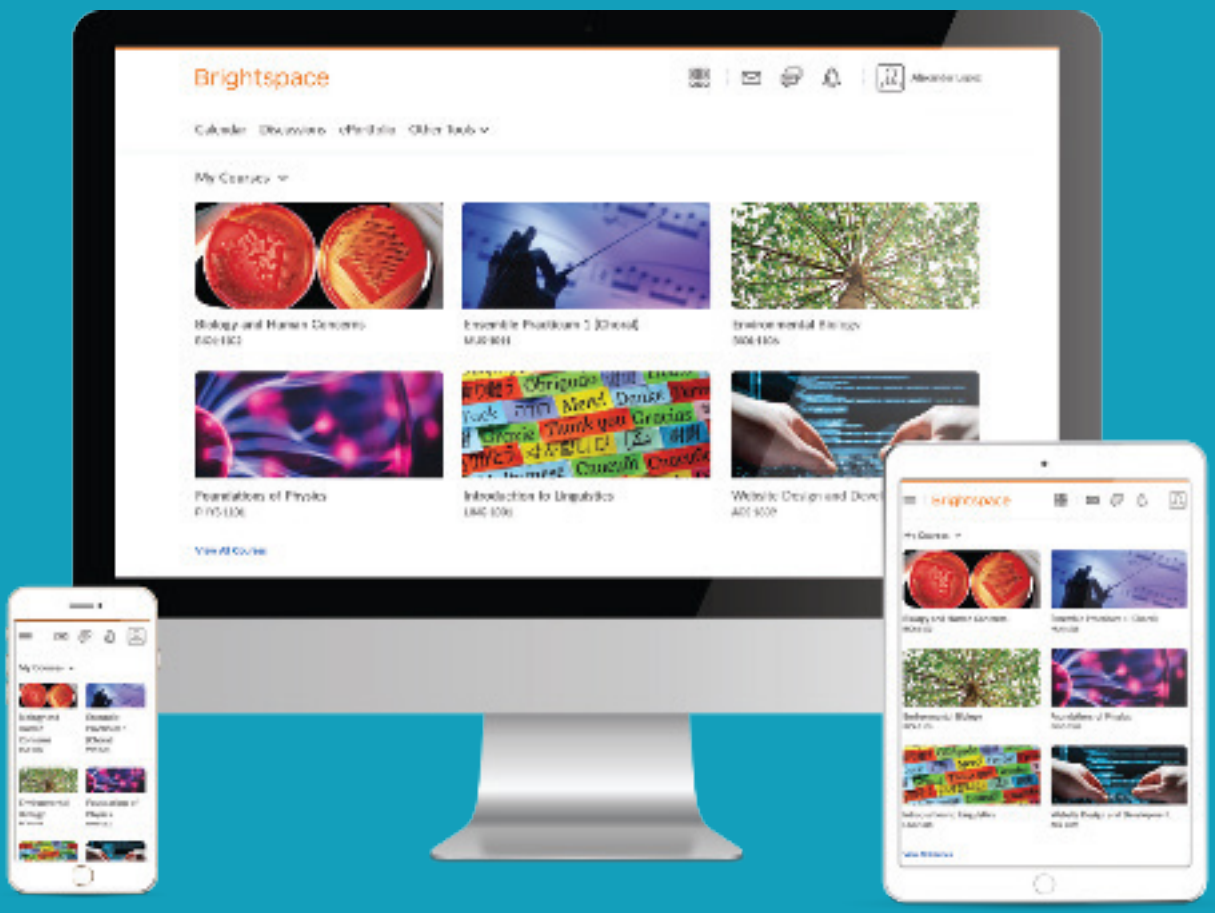
Yet institutions and instructors must be attuned to the challenges and risks of AI. The technology is only as good as the data sources. One of the primary challenges is curating the data sets that will train an AI system. Many higher education institutions don't have a "single view" of the student—a view that would inform many of these services. Building relationships for outside data sets will be important. In addition, the security of that data, the privacy and ownership policies, and acceptable uses of the data must all be part of the campus strategy.

Recognizing these limits of AI technology can avoid missteps. Limited data sets can lead to "selection bias"—for example, perhaps recommending only a handful of known careers. Or "filter bias" might inappropriately limit content recommendations to an instructor or student. Students might view new AI services as intrusive rather than valuable. Developers and users of AI systems must be aware of these risks and limitations. Institutions will need to consider these issues and others in building new systems. Transparency, training, and professional development will be required to foster a data-aware culture.

A Five-Step Roadmap

Becoming a cognitive campus requires an institutional strategy. Leaders should be engaged and visible in setting the direction and in executing plans. AI will have a profound impact on the role of the institution with all constituents, will demand sustained investment, and will have great benefits as well as risks in deployment. There are five steps that higher education institutions must get right:

1. Create strong organizational alignment
2. Build a portfolio of personalized services, starting with early "wins"
3. Develop a robust data strategy
4. Continually align to workforce needs
5. Create a more agile environment of support services



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The changes that AI has brought to the economy will challenge colleges and universities to adapt to the rapidly evolving needs of both students and employers. Coupled with the shifts caused by cognitive tools on campus, this could mean a radical transformation of the higher education institution. It will be key to create alignment on vision and goals—from frontline educators to senior leadership. The transformation can't be viewed as only a technology initiative; it must also be seen as a people initiative. Faculty and leadership development, change management, and other tactics must be employed to move forward.

The goal of AI and big data is to drive more personalization to improve user experiences and learning outcomes. Higher education institutions should start soon to build a new generation of personalized services, look for early success, and work toward a long-term portfolio. Deakin University was the first university to partner with IBM Watson and created a service to provide answers to students' common questions about campus life.[12] The solution helps students navigate across the institution, lowers costs, and sets the stage for future services. Mobile applications that leverage basic analytics can also serve as starting points for the journey.

The foundation for these services must be institutional data. Without control of key data, there is no enterprise in the future. I've heard it said that higher education doesn't have data silos; it has data dungeons. Cloud-based services have exacerbated that challenge by moving student data to remote services provided by third-party vendors, sometimes even outside institutional control. Leveraging the power of AI requires deep data insights about students, as well as a variety of other curated resources. Institutions must create a long-term plan to manage their data as an enterprise resource.

However, platform and policy are not enough. Educators and staff need support to understand the proper uses of data, along with possible pitfalls. Students deserve to have greater insight into and control over how their data is used. Education can play an important role in defining a new "data citizenship" that prepares students for the AI economy, in which their personal data is an important commodity. Colleges and universities therefore need a comprehensive policy that not only spans institutional data practice, platforms, and personnel awareness but also fosters greater awareness and engagement from students.

Education can play an important role in defining a new "data citizenship" that prepares students for the AI economy, in which their personal data is an important commodity.

The accelerating pace of change in the economy and workforce will increase the pressure to stay connected with market needs. Higher education institutions of all types must begin to build ecosystems to support these connections. Collaborative groups, such as the BHEF (Business–Higher Education Forum), have pioneered these ecosystems. Institutions can play a leadership role in convening and collaborating with key players in their region.

Creating new capabilities on campus can help too. Data-driven technology can assist students in connecting with careers, internships, and workforce-readiness preparation. Many technology companies offer online training and credentialing, which can be used by any institution to create a supplemental program. These approaches can be adapted and scaled across a variety of employers and industries in the future.

New models of teaching—like blended approaches with technology, flexible learning spaces, and challenge-based curricula—help build the "soft" skills that employers seek. Communication, problem-solving, team-based collaboration, and creativity are some of the attributes that employers consistently request. These are also the skills that will foster individual flexibility in a cognitive economy. Colleges and universities should continue to pursue these strategies to help align with workforce needs.

Finally, the future pace of change and institutional demands require an agile foundation. Flexibility and adaptability are core concepts for the future higher education institution. AI and other new

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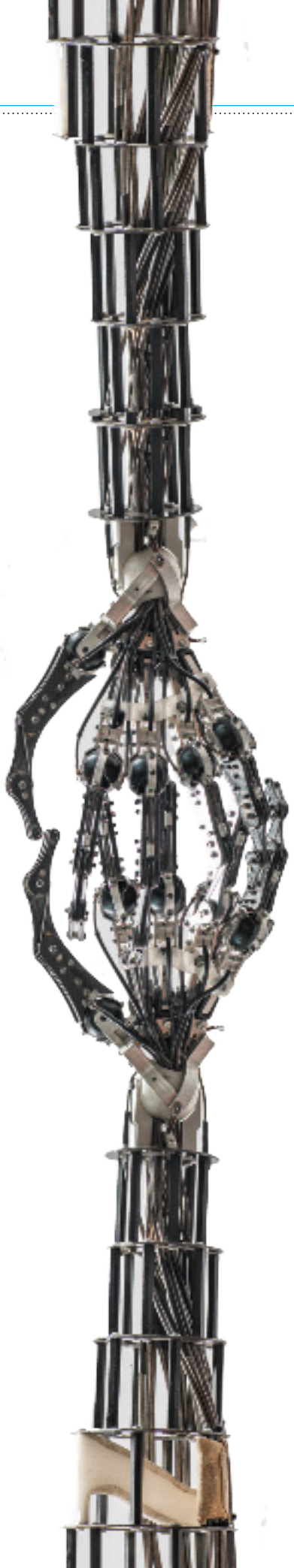
technologies, such as cloud computing, will allow a shift from fixed-cost, capital-intensive projects to variable-cost models for administrative services. To subsidize fixed costs, many institutions are exploring innovative models that are facilitated through modern technology (e.g., subletting real estate). Prospering in an era of rapid and unpredictable change will require campus leadership to define the core mission clearly and fund it consistently, while creating cost and operational efficiencies in noncore activities.

The Future

The cognitive era will unleash a new wave of innovation to reengineer business processes, lower costs, and build new personalized services. Industries and jobs will be transformed in an accelerating pace of change. Education will be critical for individuals and society to prosper in this new era. Higher education leaders should begin preparing their institutions for the challenges and opportunities that lie ahead.

Higher education institutions can become the "learning home" for individuals throughout their lives. Cognitive computing will reach prospective students sooner in their learning journey, guide them through the right learning programs, and provide ongoing support to retain the relevance of their skills. Institutions will become vital to the long-term success of their learners. These institutions can be the steward of individual skill profiles and can leverage cognitive tools to become a pervasive advisor in a rapidly changing economy. They can work with employers to continually bring insights and connections to students and better integrate with workforce needs. Successful institutions will not view this as a temporary episode for traditional students but, rather, as a lifelong relationship with learners—one in which the institution will become a trusted partner to help them navigate the economic changes brought by technology.

The future is bright for those colleges and universities that embrace cognitive computing and prepare for these changes. The past few decades have seen the pervasive growth of personal computing, transforming business processes and the student experience on campus. The coming decades will see a new wave of personalization enabled by big data and artificial intelligence. Higher education has the potential and the imperative to lead that transformation. ■



Notes

1. Aaron Taube, "How the Greatest Super Bowl Ad Ever—Apple's '1984'—Almost Didn't Make It to Air," *Business Insider,* January 22, 2014.
2. "History of Computer Sales," *Rocketswag.com,* accessed July 10, 2017.
3. Gartner, "Gartner Forecasts Flat Worldwide Device Shipments until 2018," press release, January 4, 2017.
4. Michael Sainato, "Stephen Hawking, Elon Musk, and Bill Gates Warn About Artificial Intelligence," *Observer,* August 19, 2015.
5. Mark Robert Anderson, "Twenty Years On from Deep Blue vs Kasparov: How a Chess Match Started the Big Data Revolution," *The Conversation,* May 11, 2017.
6. "Big Data, for Better or Worse: 90% of World's Data Generated over Last Two Years," *Science Daily,* May 22, 2013; Bernard Marr, "Big Data: 20 Mind-Boggling Facts Everyone Must Read," *Forbes,* September 30, 2015; Diane Berry, "Unstructured Data: Challenge or Asset?" April 9, 2012.
7. Ginni Rometty, IBM CEO, quoted in Jenna Goudreau, "IBM CEO Predicts Three Ways Technology Will Transform the Future of Business," *Forbes,* March 8, 2013.
8. Charles Fishman, "The Toll of a New Machine," *Fast Company,* May 1, 2004.
9. Jason Maderer, "Artificial Intelligence Course Creates AI Teaching Assistant," Georgia Tech News Center (website), May 9, 2016.
10. Rebecca Penty, "Pearson Taps IBM's Watson as a Virtual Tutor for College Students," *Bloomberg Technology,* October 25, 2016.
11. Sri Ravipati, "Using AI Chatbots to Freeze 'Summer Melt' in Higher Ed," *Campus Technology,* March 7, 2017.
12. Deakin University, "IBM Watson Helps Deakin Drive the Digital Frontier," media release, November 25, 2015.

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The IT Workforce: A Journey of Continuous Change

Kelli Trosvig

I stepped onto the shuttle bus with my colleagues, not knowing what to expect. We inhaled the recognizable smell of a new vehicle and found our seats as the shuttle doors latched shut. By habit, my eyes glanced forward to the location of the driver's seat as we started moving. But this was no ordinary bus: the driver's seat was empty. Or rather, there was no driver's seat at all. Most of us were taking our first ride on the University of Michigan's autonomous shuttle bus, through the MCity campus, commemorating the occasion with excited conversation (and a few selfies) as we crossed the parking lot at 10 miles per hour. The university will put the shuttle into limited general use on campus this fall, to study not only the standard safety and operating features of the shuttles for our campus, but also how riders interact with these new autonomous vehicles.

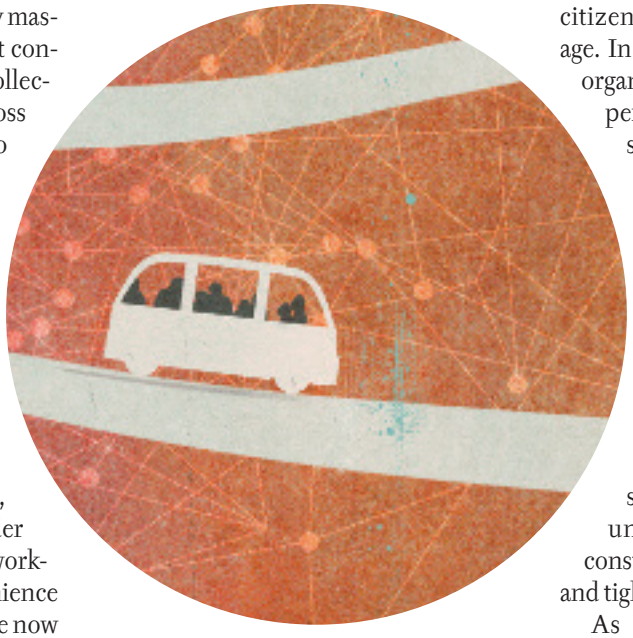
The experience inspired me. I believe that we are going to take advantage of driverless cars during my lifetime, allowing more independence and mobility for all of us in the future. Information technology is at the heart of this development, helping with the collection and management of the vast amounts of data gathered for safety and human-vehicle interactions. At MCity, the University of Michigan's test bed for autonomous vehicles, a new evaluation process is based on collecting data from every mile driven, simulating difficult, real-world driving situations, and testing them repeatedly. This work requires truly massive amounts of data, lightning-fast connections to the network, and data collection from multiple endpoints across campus. IT professionals who support this project are working at an accelerating pace to help find solutions to challenges that may not even be defined yet—requiring new skills and new mindsets for the IT workforce.

Changing Expectations

It has been ten years since the introduction of the iPhone, when many of us began to willingly—or, more likely, unknowingly—surrender vast amounts of personnel and work-related data in exchange for convenience and connectedness. Our phones are now connected to most parts of our lives, and campuses have changed as a result. The days of students and faculty fully disconnecting over the term and summer breaks have been replaced with the need to remain connected to, and supported by, their virtual communities when off-campus.

While the academic year still has its cadence, the pace of academic technology has quickened. Expectations of what composes a college or university experience have grown broader and more inclusive, entailing more technology in an ever-connected world. With the new Coalition Application, relationships with prospective students may begin many years before the admission cycle, and relationships with alumni and supporters have become richer as campuses connect to them through multiple channels on social media. Thomas L. Friedman's latest book, *Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations,* gives us a framework to examine the forces brought about by the exponentially accelerating technology ecosystem, introduced a decade ago as cloud computing, mobile platforms, and ubiquitous networks.

What does this mean for those of us working in higher education technology?



Summer was already the busiest time of the year for catching up on projects from the previous school year and implementing a growing list of new technologies and capabilities for the upcoming fall term. There was never any shortage of work. The need to be always connected has moved campus technology to a high-wire act of mission-critical tasks, with virtually no downtime. Putting out our best effort over the summer is no longer good enough as students and faculty collaborate from across the globe. Our roles in campus technology are becoming more expansive as we help our students and faculty navigate the practice and policy changes brought about by these new technologies. For example, this past summer the IT organization at the University of Michigan–Ann Arbor participated in the development of a new online course for incoming students in the College of Literature, Science, and Arts: "Digital Wolverines: Global Citizenship and Diversity in a Digital Age." This course addresses topics such as online privacy and security, fake news, trolling, digital wellness, and digital citizenship while providing an opportunity for our incoming students to read about, reflect on, and discuss with other incoming students these issues related to global citizenship and diversity in a digital age. In a relatively short time frame, IT organizations have moved from being peripheral to campus planning to serving as a vital utility (with the reliability and resiliency that entails), to assuming a new role as a strategic differentiator for our campuses. This new role creates additional responsibilities for developing or enabling policy areas such as security, privacy, and digital citizenship. At the same time, all of this acceleration and expansion is happening as colleges and universities are facing resource constraints, limited tuition increases, and tightly managed enrollment targets.

As Friedman's book affirms, the acceleration we already feel is real and is being felt in every part of our higher education institutions. Those of us in campus IT organizations can no longer keep up by working harder or smarter. We can't simply keep doing the same things better or throwing more dollars or staff at problems. Part of this acceleration is brought about by the external forces of technology around us: the iPhone, the automated vehicles, virtual reality, the capabilities of the cloud, and expectations about how the IT organization should mediate with all these disruptors. And part is due to the changing nature of the institutions we serve. College and university missions and portfolios have expanded outside of teaching and

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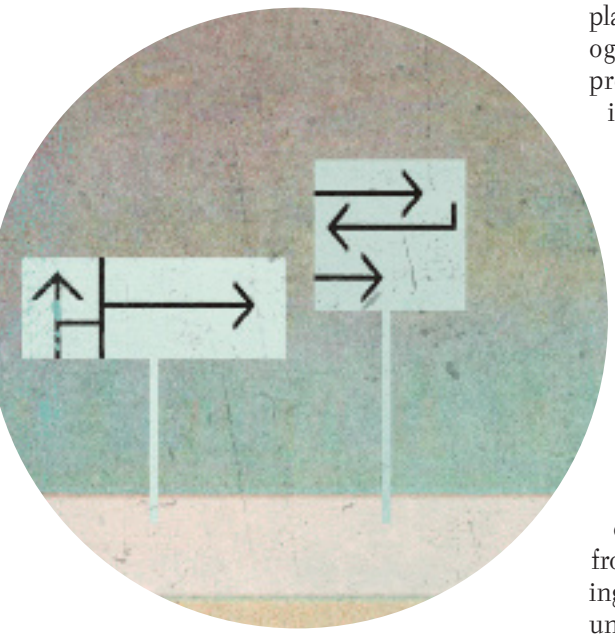
research and now encompass intensive data science and research, management of large health systems and athletic programs, and support for large online learning environments and outreach programs with varied technology needs. All of this work requires more connected and integrated systems, leaders who think differently about how we should deliver and optimize information technology, and a more adaptive workforce.

Building a Learning Organization

Higher education information technology is fortunate to have a workforce that is motivated by mission and is highly focused on improving the user experiences and outcomes of faculty and students. When IT leaders take advantage of these inherent strengths and bolster



them with strategic investments in training, the organizations are better able to stay at the edge of the technology-adoption curve that campuses increasingly require. While the demand is growing for many current services, it is the demand for the yet-to-be-defined future services that will provide new challenges to the workforce as IT organizations move from service provider to the evolving roles of service manager, advisor, advocate, and broker. At the University of Michigan, services at the edge of that adoption curve include 5G networks for research data, high-performance computing in the cloud, and security as a service for specific, highly regulated research efforts. These new roles and the services they enable will lead to greater acceleration and the development of additional, not-yet-imagined roles for the IT organization.

I often like to describe technology organizations as a balancing act between reaching for the stars and keeping the planes flying on time. Today's technology organizations need to balance promoting discovery, which involves inquiry and risk-taking, with providing rock-solid, dependable services at scale, which involves a high level of complexity and coordination. Doing both requires thinking innovatively and working with others across campus and outside the institution. The IT organization can thrive in this accelerating environment by becoming an agile learning organization. To do so, leaders need to think differently about how they develop and sustain their workforce, from fostering innovation and supporting learning through structured and unstructured methods, to embracing experimentation and learning with campus and industry peers, to encouraging learning from pilots quickly and without penalty.

Fostering Innovation

Colleges and universities are more diverse and experiential, with faculty and students always connected to their devices and networks. Much of what is happening in higher education is reflected in IT organizations. IT teams are likewise more diverse, staff and partners are more connected, and the ability to collaborate with other teams is an expectation not an exception. It is important to provide opportunities for IT staff to work through technology challenges with their peers in both safe and supported ways.

The most transformational work that we IT professionals can do is working across interdisciplinary boundaries.

The most transformational work that we IT professionals can do is working across interdisciplinary boundaries. When we are able to bring people together from varying backgrounds and help them form teams, the resulting diversity of perspective, thought, and opinion leads to better results. Giving teams safe ways to practice this results in better outcomes when the stakes are higher. The annual "Hacks with Friends" event for the University of Michigan IT community is a great example of a safe, fun environment for practicing and modeling these efforts. Teams from across campus have thirty hours to produce a minimally viable product. This year's winning entry—"TriggerFigureOuter," a migraine trigger-tracking identification tool—brought together groups from central IT, engineering IT, health IT, and dentistry IT organizations.

Other ways to bring people together include communities of practice, regularly scheduled brown-bag meetings, and IT symposiums and poster sessions that provide open forums for staff to gain fresh perspectives from different areas of the institution. Leadership training and mentorship programs also help to develop the soft skills and the cross-organizational communication critical to an IT organization's success.

Providing Ongoing Support for Managers

Managing in technology organizations has become increasingly challenging as teams often work across multiple

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technology platforms and projects. This is all the more difficult because of the rapid acceleration in technology; managers may have only the most basic understanding of what will be needed next. As a learning organization, the IT organization needs leaders who will rethink support for managers and human resource functions and will focus much more on workforce development for the organization, also while helping managers and teams develop professional plans for their groups and individual members. Often this is as simple as finding examples of what is working inside and outside the organization and supporting those cases with policies that encourage experimentation. Some of these will be small opportunities that can be leveraged and expanded into larger opportunities across the organization. For example, at the University of Michigan, we have developed staff rotations from the service center into desktop support, and rotations from desktop support into desktop engineering, allowing the organization to retain valuable staff while providing the staff with opportunities to expand their skill sets.

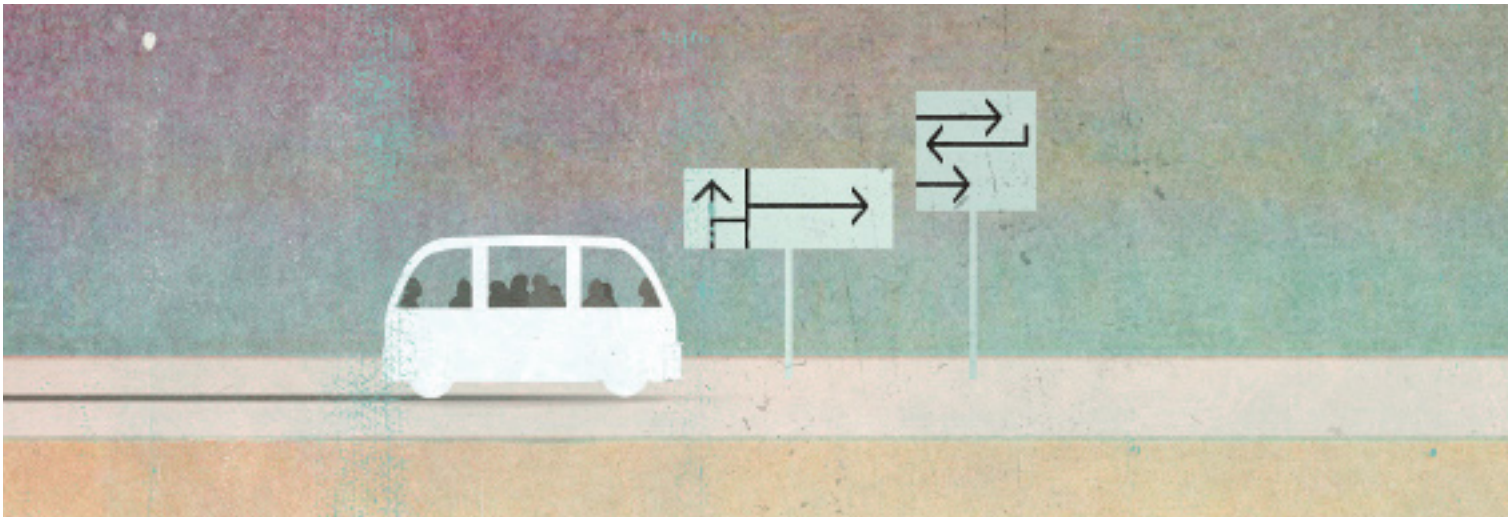
Early last spring I was having a conversation with a member of my team about a vision for workforce development that provides ladders for staff to gain new skills and opportunities and contribute to the organization through job rotations, workforce training plans, and skills-development investment at scale. Not ten minutes later, another team member stopped by my office to share that he was participating in an engineering rotation within his desktop support team to develop new skills. He was excited about the opportunity, and I was both excited for him and happy about what it said about the culture we are creating in our organization. This is the type of thing that makes my day as a leader. It's not always the big developments that are exciting; sometimes it's something small that shows we are heading in the right direction.

One of the most important skills to develop in our IT organizations is an ability to take some calculated risks.

One of the most important skills to develop in our IT organizations is an ability to take some calculated risks in developing new capabilities, business models, and services. This is best exemplified by piloting services. True pilots of services give us the opportunity to make honest assessments of what we learned, but they also require us to make hard decisions about whether to approve a service for implementation or to not progress it forward (perhaps because this isn't the right time or the right service for our institution). When pilots are viewed as learning opportunities by organizations, then by definition all pilots are successful, in that they contribute both to a better understanding of the problem and to a solution. It takes discipline to adopt a true pilot mindset, structuring the pilot as a learning opportunity and staying true to an agreed-upon set of criteria for making a go-forward decision. It is easy to fall into the trap of full implementation because of a vocal constituency or because everyone else is going forward. Once a series of pilots has sent services back to be redesigned, determined now is not the right time for this service, or captured lessons learned and decided not to go forward, subsequent pilots more easily become true learning opportunities.

Partnering with Industry

Industry partnerships are becoming increasingly important to higher education institutions as faculty and students begin to address the most challenging research problems. When I moved across the country from Seattle to Detroit, I had to relearn the "Big Three" as Ford, General Motors, and Chrysler—not Microsoft, Amazon, and Google. However, all six are interested in partnering with colleges and universities



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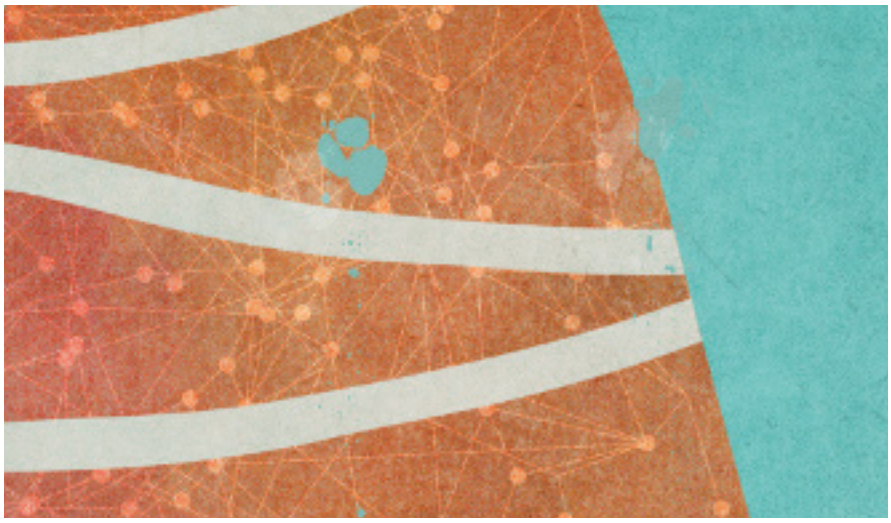
to explore the paradigms of connected transportation and mobility, whether through drones, connected cities, or autonomous vehicles.

Some of the most interesting questions about how we will interact and share information in this connected, mobile world are being asked through these partnerships. Health care and cybersecurity are two other strong areas of collaboration between industry and higher education. The complexity and scale of these multidisciplinary problems require forging broad partnerships and sharing information across both institutions and industries.



Learning from Peers

On the final day of the EDUCAUSE 2016 annual conference in Anaheim, California, I attended one of the last sessions of the day: "Culture Shift: How DevOps Changed the Way We Think about IT," by Adam Mikeal, director of information technology for the College of Architecture at Texas A&M University. Despite the thinning crowds as vendors packed up their exhibits and others caught flights back home, Mikeal's session was at overflow capacity. Higher education leaders recognized the need to learn about the DevOps movement that is being rapidly and broadly adopted by our industry peers, and how it could be implemented in the college/university environment.

To me, this represented what is best about IT leadership: an eagerness to learn about practices from outside our industry and to share our successes, failures, and challenges. As Mikeal shared his college's initial steps toward implementing a DevOps culture with software development, and how the school moved to more fully embrace automation, I could see leaders across the room beginning to understand the power and potential of this new methodology for their own organizations and campuses. And even more importantly, I saw that they were exercising the mindset of trying something new, perhaps at a smaller scale.

One of the best things about higher education is the collaborative nature of our peers. There is an unmatched camaraderie across the higher education IT profession and a willingness to contribute to each other's successes, share the good along with the real lessons learned, and allow all of us to improve and add value with each iteration. I experienced this as a new leader in higher education nine years ago, and I felt it again this year when I joined my new institution, the University of Michigan. Learning and sharing is part of our DNA in higher education.

There is an unmatched camaraderie across the higher education IT profession and a willingness to contribute to each other's successes.

This past summer, I took a busload of IT leaders from Michigan to Notre Dame to learn about Notre Dame's journey to the cloud for its campus infrastructure. Although there might be an intense rivalry between the two universities' athletic teams, the members of Notre Dame's IT team were immensely collaborative and collegial as they shared as much as could be packed into a day. They answered every question we asked and shared their successes as well as the harder lessons learned overall. The day proved to be incredibly productive for everyone who attended from both institutions.

The University of Michigan team that traveled to Notre Dame represented all parts of our campus—from the business school to medicine to research to the central IT organization. On the bus ride there and back, we rotated seats every thirty minutes to learn more about one another. We purposely chose seatmates from outside our own organizations and

DevOps

DevOps is the sharing of responsibilities between software development, service operation, and quality assurance—creating a close-knit organization. The benefit of the DevOps process and culture is the ability for developers to utilize automated testing, deployment, and system infrastructure changes as part of daily work—commonly known as continuous integration/continuous delivery (CI/CD)—to deliver projects and systems more quickly and with higher value.

discussed our backgrounds, what we hoped to learn, and what we could apply or consider trying back at Michigan. As in most other aspects of life, the trip to Notre Dame became as much about the journey as the destination, about how we learned together and shared with one another. It's not every day that you can take fifty IT leaders on a one-day, seven-hour, round-trip bus trip and have everyone leave the bus energized and in good spirits, ready to share what they learned with their teams.

A Journey of Continuous Change and Improvement

While a physical bus can fit only so many people, those of us in higher education IT organizations need to make sure to invite everyone on the metaphoric bus. We can do this by making all managers accountable for creating professional development plans for each person in their group and by helping them to understand the implications of business demands or changes for their areas—as well as the importance of communicating these implications to their teams.

The campus technology organization, just like the larger college or university, is ultimately a people business. These organizations are only as good as the skills and culture of their people. The most successful technology organizations and higher education institutions create environments that are supportive and collaborative, and that provide opportunities for cross-training and technical and professional growth for all their staff. They create opportunities for staff to learn from one another as well as from others outside the organization/institution.

People who work in information technology, no matter the industry, are naturally curious individuals who embrace change. As IT leaders, we too must commit to a journey of continuous change and improvement. Some of us are lucky enough to do this work in higher education, where every day we are urged by our faculty and students to push the boundaries, driven sometimes by technology and sometimes by cultural change. It is our responsibility to make sure our teams are prepared and supported as we take this journey together. ■

Kelli Trosvig (ktrosvig@umich.edu) is Vice President for Information Technology and Chief Information Officer at the University of Michigan–Ann Arbor.

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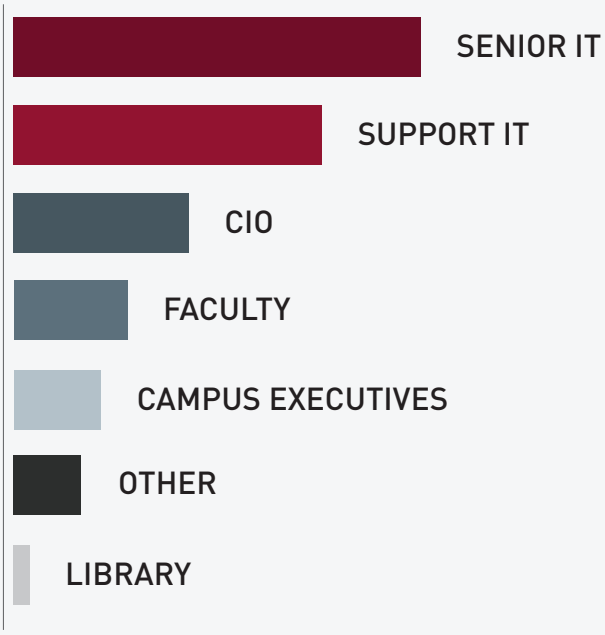

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From CLIMBING WALLS To A CULTURE Of Caring

Kirk Kelly and Brenna Kutch

Back in the 1990s to the mid-2000s, a phenomenon swept the United States in higher education: swanky new recreation centers with impressive new climbing walls. For the colleges and universities that followed the trend, these centers became a highlight of every campus tour as a way to help convince students that this institution was the school for them and that their lives—with the cascade of multicolored plastic rocks at their fingertips—would finally be complete.

ILLUSTRATION BY RYAN PELTIER © 2017

On the employment side, we've seen a similar trend with technology companies. This can take the form of many onsite attractions, including dry cleaning, executive chefs for evening meals, kegs of beer, hair salons, jungle-gym slides, and more. At this rate, daily goat yoga sessions can't be far behind. To be clear, I'll state that none of these things are bad: they are good additions to a workplace that is employee-focused. Be it climbing walls or helicopter rides, these amenities give campuses and tech companies alike strong recruiting tools, but ultimately, it is doubtful that they significantly move the needle when it comes to student or employee retention. They are not the core of, and cannot replace, what makes a campus or workplace fundamentally great.

Higher education is realizing that student success takes more than ostentatious facilities. As a result, it is focusing on what this success actually means, what contributes to the success, and what the services we provide are doing to drive that success forward. Many campuses are concentrating on coordinated care networks, which support not only educational success but also mental and financial health. Likewise, this is what higher education must do to move forward with employee success and engagement. Organizations with significantly less funding (e.g., higher education and the public sector) can never keep up with private tech companies; however, that doesn't mean they are noncompetitive. Even though higher education may not be able to compete in a traditional sense (from salons to salaries), it can offer something different—something that really matters and that doesn't require massive funding efforts. This something is the genuine culture of the organization: employees' relationships with their boss and others and whether or not they feel cared for.

Work involving employee engagement isn't new; in fact, Gallup has been surveying this topic since the 1990s.[1] In recent years, however, the focus has shifted more to caring for employees on a human level and away from offering flashy perks that "should" equate to engagement and retention. Fortunately, research demonstrates time and again that engaged employees have a dramatic positive effect on the workplace in the form of productivity, customer service, higher retention, and support of and involvement in the core mission.[2] In fact, in *The Employee Experience Advantage*, Jacob Morgan emphasizes quality over quantity in terms of staffing. Companies that invest in the employee experience can be more successful with fewer, higher-paid, and more engaged employees. The secret lies in the core elements of the workplace culture and not just the physical amenities. This book uses the phrase *employee experience* rather than *employee engagement* and defines the employee experience by asking, "Do you show up to work every day with the intention of helping others succeed?" rather than the traditional employee-engagement question, "Do you wake up every morning wanting to go to work?"[3]

Whether defined as engagement, experience, or any other number of words, the goal is the same. Mike Myatt, in a *Forbes* magazine article, summed this up excellently: "If you fail to care about people at a human level, at an emotional level, they'll eventually leave you regardless of how much you pay them."[4]

> Returning to the idea of quality over quantity, is it better to have fewer, well-supported, dedicated employees or more staff with thinner benefits that don't support them as well?

What Is a Culture of Caring?

There are many definitions of leadership, of course, but Simon Sinek, author of the book *Start with Why: How Great Leaders Inspire Everyone to Take Action* (2009), may have described it best: "Leadership is not about being in charge. Leadership is about taking care of those in your charge."[5] Building a culture of caring means providing a supportive environment that is focused on the employees; it means truly wanting to take care of them.[6] Creating this environment is a fairly well researched concept, and there have been many books, articles, TED Talks, and even comic strips (with some great examples of what not to do) about how to provide this environment.

A culture of caring is employee-centered, which means being human-centered. And at the core of every human, sometimes buried deep beneath logic and sensibility, are feelings that influence every aspect of our lives. Think about the time spent at work: *in general*, these are the peak productive years of our lives (between the ages of 25 and 65), in the peak hours of the day (8 am to 5 pm). We spend approximately 100,000 hours of our lives at work, and it would be delusional and possibly cruel to expect to leave our humanness at home. We cannot simply turn into emotionless robots of productivity at work.

The poet Maya Angelou reminds us of the lasting memories that others will have of us as people and most certainly as leaders: "I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel." As we look at how to create a culture of caring and have a lasting impact in people's lives, we must do so from employees' perspective: how are we making them feel?

#StudentSuccess

Education is the most powerful weapon which you can use to change the world.

~ Nelson Mandela

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They Should Feel Welcome

Feeling welcome centers on the basic human need to feel that we truly belong, that our contributions are wanted, that we are being included. Think of it this way: when you approach a circle of people talking at a party, either the circle remains closed or it opens up to include you in the conversation. We all know what it feels like to stand on the outside and eventually walk away. Is it possible we are making our employees feel this way?

Recruitment and Onboarding

Feeling welcome starts well before the first day on the job. The opportunities to welcome future employees include the organization's job posting, recruiting tools, interview process, job offer, and then the first day and subsequent onboarding process. Hiring is a two-way process, and the organization is responsible for how it markets itself during recruitment. Does the job advertisement reflect why the organization is a great place to work, or does it merely list a set of demands reminiscent of a hostage negotiation? Are the interviews a positive experience for job-seekers[7] or an arduous and intimidating experience not remotely resembling a day of actual work in the organization? On the first day, is the new employee directed to an empty office and left alone to figure out the bureaucratic paperwork process and what lunch spots to avoid, or is the team and manager there to guide the employee through the process of settling in at a new organization?

Employees' first day at a new job is one that they will likely remember for years to come (be it good or bad), and the feeling that organizations give new employees will be essential for those memories as well as retention. Great employees with high expectations will often become disillusioned after poor onboarding experiences and will depart the organization much sooner than expected. Many other good candidates will never even get that far if the recruitment process is lackluster or, worse, focused on the checkboxes of organizational needs. If we care about people, we will work hard so that employees feel welcome during the hiring process and throughout their job experience. This necessary hard work will be well worth the time and will result in more successful employees.[8]

What are a few steps to make this experience feel more welcoming? Throughout the recruitment and hiring process, take the time and effort to communicate with candidates in a timely fashion. Inform new employees why you are excited to have them join your organization, and provide them with as much information as possible about their first few days on the job (including a schedule and what to expect). Make the onboarding process as transparent as possible so that managers and new employees alike understand everything that needs to be accomplished in the first few weeks and beyond. Intentionally carve out a welcoming space for new employees.

> Feeling welcome centers on the basic human need to feel that we truly belong, that our contributions are wanted, that we are being included.

Inclusion

An essential part of employees feeling welcome is an environment that encourages people to bring their true selves to work. This is not just about the numbers and demographics; a culture of true inclusion and diversity means an environment that is open to encouraging discussion, being wrong and learning from it, and meeting in the middle. Does the organization respect and encourage differences, or does it exude a mentality of culture assimilation that would impress any Borg or Dalek swarm?[9] Are leaders a good example of the inclusive culture the organization is trying to create, or does their talk differ from their walk?

An un-inclusive organization will suffer by driving out anyone who does not fit the cookie cutter of majority culture. This can result in lower-performing teams, harmful press (remember the Uber article?), and lack of ability to keep diverse talent, which is essential for organizational growth. On an ethical level, if we care about people, we want them *all* to feel welcome and a part of the organization. Acknowledging that the tech industry has historically not included (or has even actively excluded) certain types of people—including women, people of color, and LGBTQ folks—and that it has been difficult for some of these employees to feel welcome or to advance in the industry is the first step to looking at how to change this situation.

In her book *Take the Lead*, Betsy Myers lists authenticity as the first of seven leader attributes.[10] Like any other aspect of workplace culture, authenticity must be led by example. Leaders who bring their true selves to work every day are an important component of encouraging the organization to be authentic and inclusive. Leadership must encourage healthy conflict practices so that when differences inevitably arise, they can be handled in a constructive manner. Teams and hiring committees, as well as organizational leadership, should reflect diversity and different perspectives; newly hired diverse employees will not stick around in an organization that does not truly make people feel included.

They Should Feel Healthy

Although employee wellness programs might look like some of the extravagance that is unnecessary for a culture of caring, they are an essential part of supporting employees. Caring about people means wanting them to be physically, mentally, and emotionally healthy. While research is more substantial on physical health, the latter two are harder to notice but just as crucial.

Benefits and Leave

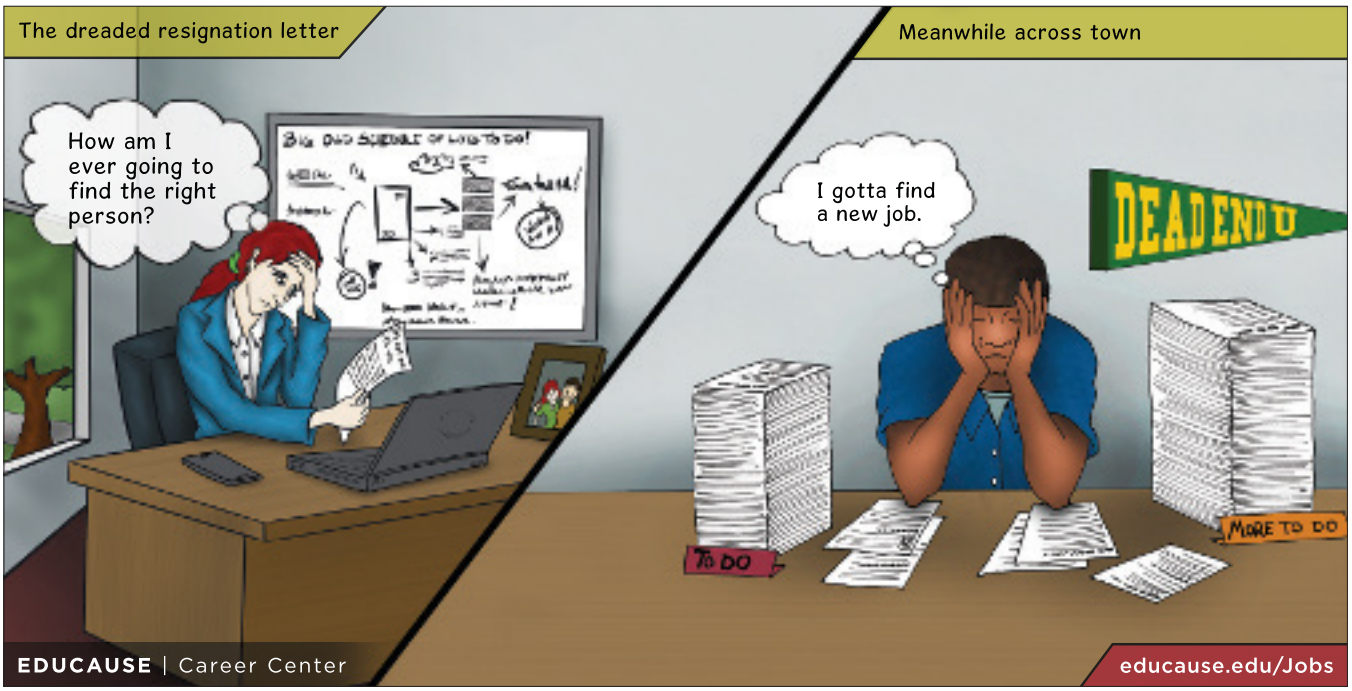
The first and most obvious way to make employees feel healthy is to provide them with a good benefits package, not to placate them but because you truly want them to be healthy and happy. This package should go beyond healthcare to include retirement, vacation, and more. Returning to the idea of quality over quantity, is it better to have fewer, well-supported, dedicated employees or more staff with thinner benefits that don't support them as well? Do you encourage employees to not exceed a 40-hour work week whenever possible, or do you expect them (either verbally *or* by example) to often work longer hours, leaving them physically and mentally exhausted when they are at work? Do you encourage them to take time to care for their families via a healthy work/life balance, or do you expect the organization to be their topmost priority at all times? Do you provide time and resources for therapy or other forms of mental health, or do you acknowledge only physical sickness?

The effects of an unhealthy work culture range far beyond lost productivity from sick days, though the physical effects of mental and emotional stress can certainly add to these days. Employees with sick family members or emotional distress will be "checked out," which is something that cannot be overcome by lectures or discipline but only by support, time, and resources. Those who never take the time to unplug from work for a week or two at a time will be overloaded and overextended without time to relax and focus on themselves and their families. Despite what policy may dictate, having a boss who responds to emails regularly at night and on weekends will make employees feel pressured into being connected at all times.

How can you help people feel healthy through benefits? Provide a benefits package that shows you care about your employees and that values the person and not just the financial impact. Promote a culture of real work/life balance by encouraging employees to unplug when they're not at work and by beginning this behavior with managers and leaders. The organization not only will lead by example but also will demonstrate trust that employees can handle things as needed. Finally, poor sleep can have drastic effects, so if an employee isn't sleeping often, find out what is going on and see if something can be done at work to help.

Physical Environment

Create a workspace that employees enjoy and that facilitates their physical health. Do you ask staff where, when, and how they prefer to work and try to accommodate that, or do you assign spaces and schedules with no flexibility? When staff



ask for higher-quality chairs or standing desks, do you take their physical needs into consideration and invest in their workspaces? Do you have a refrigerator and prep area for staff who want to bring healthy home-cooked lunches, or is dining out every day the only option? Do you encourage employees to walk around and stretch throughout the day?

Skimping on physical support for the sake of saving a few dollars will have much greater financial impact in the long run. The physical repercussions of our techno-industrialized culture in which we spend most of our daytime hours sitting (often with poor posture) can spawn serious negative health issues, from musculoskeletal to cardiovascular and more. Staff who feel forced into a physical environment that is a mismatch to their working style, such as in a bland cubicle or with no scheduling flexibility, will be less engaged and less excited about coming to work. Those who have no option other than dining out will end up spending more and likely eating a less healthy diet than if they could manage their own lunch and snacks throughout the day.

To help encourage health through the physical environment, look at the workplace from the viewpoint of employees and also ask them what they need. See where you can be more accommodating. Approach scheduling and location flexibility with an open mind and find a way to meet in the middle if possible. Encourage employees to personalize their office spaces. Encourage walking meetings, stretch breaks, or group activities such as lunchtime yoga or potlucks. Staff are full of great ideas and have many different perspectives; utilize that to come up with ideas for making the workplace a physically supportive, healthy place to be every day.

They Should Feel Trusted

We all want to feel trusted, but we sometimes have trouble giving our trust to others. If we care about our employees, we should genuinely have faith and trust in their abilities and motives.

Autonomy

In his book *Drive: The Surprising Truth about What Motivates Us,* Daniel H. Pink talks extensively about autonomy—that it's in our nature is to be curious and self-directed, not inert and passive.[11] Autonomy means acting with choice, being players not pawns. Do you lead your staff with autonomy (which breeds engagement) or with control (which breeds compliance)? Are employees empowered to make decisions, or are they told that they must consult with management for everything? Do they refer to management as trusting or as micromanagers? The repercussions of a micromanaged workplace that lacks trust are disastrous. Loss of productivity, increased stagnation, high turnover, less collaboration, and higher stress are all problems found in low-trust organizations.

To increase autonomy, empathize with your employees' point of view. Assign goals, not tasks, and realize that many people will take different paths to accomplish the same goal. Allow employees to select their own schedules, environments, and teams when possible. Understand how they work best and what kind of feedback is the right balance of structure and autonomy.

Transparency and Two-Way Communication

Caring for employees includes giving them the information they need to do their jobs autonomously so that they can perform the best work possible. Do you default to sharing organizational information unless it is confidential, or do you keep things hidden unless someone asks? Do employees know how decisions are made (and by whom), or is the leadership process a black box? Are employees allowed to ask questions at all levels of leadership, or do they feel they will be punished for their curiosity?

Leaders who are opaque and closed off from staff can damage the feeling of trust, which is particularly crucial during rough times when hard decisions

need to be made. If you don't communicate with employees, they may assume you are hiding information and may fill the void with their own stories, which will increase the rift between leadership and frontline staff. Lack of information flow also means that the organization will have less capacity to know what's going on and to make decisions, which will have its own set of logistical issues.

Increasing transparency must be done strategically, since not everything should be shared. Make budget information or meeting minutes available, whether online or in person. When you survey staff, share the results and what you've done as a result. When staff request information that you can't share, explain why it can't be shared and avoid penalizing them for their curiosity.

They Should Feel As Though They Are an Investment

Caring for employees at a human level includes furthering their learning and development—and not just because doing so benefits the organization.

Professional Development

Investing in professional development means you value their learning. Do you commit to sending them to needed training, or is "it's not in the budget" a commonly heard phrase in the organization? Do you proactively provide nontechnical opportunities that might be helpful, or do you simply react to what people ask for? When employees seek out learning, do you consider their future career path or only whether the training will benefit their current jobs?

Claiming to care about employees but not investing in their learning and development is an obvious disconnect that they will notice. Though professional development budgets may be an easy target for reductions, keep them steady, especially in times of shrinking funding. Understand what your staff members want to learn. In addition to conferences, there are other low-budget learning options such as cross-training, projects, or online courses. For college and university employees, many classes can be audited or taken for credit at very low cost. Think about the nontechnical skills that are useful for employees regardless of their job function (e.g., communication or time management), and proactively organize on-site training to get more learn for your dollar.

Humans are generally unhappy with stagnation. If your employees feel "stuck," they will likely look to another organization to provide opportunities for growth. Refusing to invest in your employees will cause negative repercussions not only for the individual but for the organization as well.

Mastery and Flow

Caring about employees means you want them to enjoy and be challenged by their work. In *Drive*, Pink notes that mastery isn't just about excelling in a skill; it is also about reaching that point of optimal challenge that balances the "Goldilocks line" between too difficult and too easy. Is the work you assign your staff appropriately challenging, or are they constantly finding themselves bored or overwhelmed? While work

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that is too hard and work that is too easy sound like opposite problems, they will likely have a similar effect: your employees will be unsuccessful and will leave the organization to seek out something that is appropriately challenging. Bored or floundering employees are less productive and less likely to be giving discretionary effort to your organization.

In addition, flow and mastery cause employees to get lost in their work. Do you provide the time and space for them to get "sucked in," or are they constantly being interrupted by meetings or inefficient communication practices? Do you invest the resources (time, energy, and money) to give them the surroundings they need to for mastery and flow, or do you expect them to find mastery on their own? Constant interruptions mean more time is wasted with stopping and starting—leading to higher frustration and lower output.

To support flow, find out what your employees are interested in and what makes them lose track of time. Review meeting and communication practices to ensure that interruptions are being tamed as much as possible. Consider blocking off one day a month on everyone's calendars so that they can catch up, achieve flow, or dive into learning something new.

Tools and Technology

Employees must have the tools necessary to do their jobs well. In his book *The Employee Experience Advantage,* Morgan challenges organizations to use consumer-grade technology (i.e., user-friendly).[12] Do you provide staff with newer, easier-to-use technologies, or are they using technologies that are decades old?

Skimping on tools means that more time is wasted finding ways to perform work with subpar resources, and in IT organizations, that can mean that a significant amount of time is spent creating new technologies to tape together the misgivings of old ones. Refusing to spend a few hundred dollars to greatly improve employees' ability to do their job will be perceived as not understanding or caring about their work.

Make sure you know what your staff members do and the tools they need. Instead of creating workarounds, take a serious look at a permanent solution. Finally, provide useful technologies, but be sure you're not using them as a substitute for face-to-face interaction.

They Should Feel Heard

When you care about people, you care about what they have to say. You care that they feel respected, heard, and valued—isn't that a basic desire that drives us all? Plus, employees often have great ideas that can help the organization. Listening to your staff may take time and may occasionally feel less important than some of the more pressing or technical aspects of leading an IT organization, but doing so is essential for building a department with staff who feel cared for at an individual, personal level and who

feel comfortable sharing ideas and asking questions.

Communication with Leadership

Listening to people lets them know you care. Are you actually listening to employees when they talk to you, or are you "multitasking" and not really absorbing their words? Are you paying attention, or are you just waiting for your turn to speak? Are you interested in who they are as a whole person, or do you care just about the job-related parts?

Your employees can usually tell when you are feigning interest, which is arguably more insulting than completely ignoring them. If they feel that talking to you is a waste of their time, they'll likely stop. Listening (or not) will set a very strong example for the rest of the organization despite what you claim to value.

If you are worried about forgetting ideas when your employees are talking, jot down on a piece of paper notes about what you want to say. Make sure you won't be distracted by emails or text messages when you are talking to someone. Initiate conversations and ask questions. Take a genuine interest in employees' lives and their problems, even if not job-related.

Feedback

Hearing what employees think is difficult if you never ask for their feedback. Even the best leaders can't think of everything, and the perspectives of frontline staff are invaluable for understanding the organization and getting new ideas to solve ever-changing problems. Do you ask staff what they think, or do you assume you know it all since you are the leader or once performed their duties? When you receive negative feedback, do you have humility and use it as constructive guidance, or do you punish honesty? When your employees tell you things, do they see changes as a result, or does their feedback go into a mental file cabinet never to be discussed again?

Not asking for or listening to feedback will cause your employees to feel disrespected, unimportant, or not valuable. Ignored employees are less engaged and productive, and they take more sick time. Employees who feel disenfranchised can actively damage the organization by spreading their sentiment to others. Refusing to care about your employees' opinions is one very effective way to damage loyalty to you or the organization.

Be sure to incorporate employees' suggestions when appropriate. Set up multiple venues for providing feedback, from anonymous forms to group exercises in staff meetings. Provide staff with space and time to talk to you, and avoid the "open door policy," which puts the impetus solely on them. Demonstrate your appreciation by ensuring that you are prepared to accept negative feedback without resorting to anger and accusations or ignoring what they have told you.

Difficult Conversations

Leaders must be able to have difficult, emotional conversations with staff and must set an example for how they expect others to communicate as well. When someone criticizes a decision you made, do you reflect on the situation, or do you get angry? If you are having a bad day and an employee comes to you frustrated, do you explain that you'd prefer to have the conversation later, or do you let the conversation get heated to a damaging level? When someone sends an accusatory email, do you spend an hour writing a zinger of a response, or do you pick up the phone and try to understand the sender's viewpoint? Employees who aren't sure which "version" of you they will get will not feel comfortable coming to you with their concerns. If they fear an angry or retaliatory reaction, they will quickly lose trust in you and the organization.

Consider reading *Crucial Conversations* or *Fierce Conversations* or one of the many other books about constructive communication in stressful situations.[13] Make sure your employees feel safe talking to you about difficult things, including criticism of the organization. Hold managers to the same standards, and check in with them about their difficult conversations, ensuring they are having these conversations when necessary.

Leaders must be able to have difficult, emotional conversations with staff and must set an example for how they expect others to communicate as well.

They Should Feel As Though They're Making a Difference

Making a difference and affecting the world around us is one of the strongest motivators for why we do *anything*. Helping employees find that fulfillment in (and also outside of) their jobs is one way to demonstrate that you care.

Purpose

Purpose is the intrinsic human drive to work toward something greater than oneself. It must be infused into the daily work of employees. Do employees understand how their work benefits the greater good of the organization, or do they see only the small circle of influence closest to them? Are they engaged with the larger purpose of the organization, or do they simply show up for eight hours a day and then go home? Do they spend a majority of their time in a job mindset, a

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career mindset, or a purpose mindset?[14] Does the work they do for the organization align with their personal goals regarding the differences they want to make throughout their life?

Employees who do not have a strong sense of purpose in their work lack the guiding star of motivation. They may not see the value in the less exciting aspects of their work and may thus feel less inclined to do those tasks. A lack of purpose for the organization or for their own lives will eventually leave them unfulfilled, no matter whether other aspects of the job are great.

How can an organization create purpose? It may just take some connecting the dots. Higher education and other public services have already been tasked with serving the public good, so purpose is fairly easy both to define and to draw a line to.[15] Talk to employees about the purpose they find in their life, their job, and the organization and about how (or if) those all align. Survey your entire staff to see if they find purpose in the work they do.[16]

Connection

Myers says it best in *Take the Lead:* "Feeling connected to others is what gives our lives meaning and fuels our sense of belonging. A sense of connection can come from a shared passion, a shared experience or history, a shared goal or mission. It speaks to our desire to identify with and feel part of something bigger than ourselves."[17] Caring for employees means encouraging those connections to further solidify their sense of purpose. Do employees have personal connections at work so that they can understand how their work affects others, or do they feel like an army of one? Do they see the difference they make with their work, or is there a wall that they can't see past? Do they feel encouraged to connect with coworkers and the community, or do they think their jobs end at the proverbial door?

How can you promote a sense of connection between employees and their community? Create or encourage events that draw the two together, such as hosting or volunteering at community events (colleges and universities have many options available). Find mentoring or other volunteer opportunities to provide one-on-one time with individuals. Look for ways to bring your community into the workplace, or highlight individual stories of how your organization has made a difference.

Why Care?

Ultimately, creating a culture of caring will make the difference between paying employees to work for the organization and having them get up in the morning *wanting* to work for the organization. Staff will be more engaged, more committed, and more productive, will encourage others, and will live longer lives. Caring can't be faked. While this article has mentioned many ways to focus on a culture of caring, caring is not a list of boxes to check off. It is never "finished." Training people to genuinely care is difficult to do, so organizational leaders must keep this attribute in mind, along with the traditional technical skills, when selecting managers. A culture of caring must be led by example from the top down. If created successfully, this culture will infuse an organization with a feeling and an energy that cannot be replicated no matter the amount of money spent on climbing walls or executive chefs. ■

Notes

1. See "Gallup Q12 Employee Engagement Survey," Gallup website, accessed July 10, 2017.
2. John Baldoni, "Employee Engagement Does More than Boost Productivity," *Harvard Business Review,* July 4, 2013.
3. Jacob Morgan, *The Employee Experience Advantage: How to Win the War for Talent by Giving Employees the Workspaces They want, the Tools They Need, and a Culture They Can Celebrate* (Hoboken, NJ: John Wiley & Sons, 2017), 24.
4. Mike Myatt, "10 Reasons Your Top Talent Will Leave You," *Forbes,* December 13, 2012.
5. Simon Sinek, Twitter post, January 28, 2015.
6. See David Bruce, "Team Culture: If You Don't Build It, Someone Else Will," *EDUCAUSE Review,* September 19, 2016.
7. The former senior vice president of people operations for Google argues that interviews should be "the best day of their lives": Laszlo Bock, "Here's Google's Secret to Hiring the Best People," *Wired,* April 7, 2015.
8. Allison M. Ellis, Sushil S. Nifadkar, Talya N. Bauer, and Berrin Erdogan, "Your New Hires Won't Succeed Unless You Onboard Them Properly," *Harvard Business Review,* June 20, 2017.
9. Roberta Matuson, "Uncovering Talent: A New Model for Inclusion and Diversity," *Fast Company,* September 11, 2013.
10. Betsy Myers, *Take the Lead: Motivate, Inspire, and Bring Out the Best in Yourself and Everyone around You* (New York: Atria Books, 2011).
11. Daniel H. Pink, *Drive: The Surprising Truth about What Motivates Us* (New York: Riverhead Books, 2009).
12. Morgan, *The Employee Experience Advantage,* 82.
13. Kerry Patterson, *Crucial Conversations: Tools for Talking When Stakes are High* (New York, NY: McGraw-Hill, 2012); Susan Scott, *Fierce Conversations: Achieving Success at Work and in Life, One Conversation at a Time* (New York, NY: Viking, 2002).
14. Dan Pontefract, "You're Never Done Finding Purpose at Work," *Harvard Business Review*, May 20, 2016.
15. Check out theories on Public Service Motivation (PSM), such as Gregory A. Mann, "A Motive to Serve: Public Service Motivation in Human Resource Management and the Role of PSM in the Nonprofit Sector," *Public Personnel Management* 35, no. 1 (2006).
16. If you need some help getting started, try Pink's *Drive,* and also Sinek's *Start with Why* (2009), about the efficacy of purpose in the workplace.
17. Myers, *Take the Lead.*

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OER: The Future of Education Is Open

Last March, activists in the Open Educational Resources (OER) movement and representatives of the publishing industry debated with each other at the 2017 SXSW EDU Conference and Festival. When the dust settled, the two sides agreed on two things: (1) the textbook publishing market is "broken," and (2) the future of courseware will be increasingly digital.

OER are "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others. OER include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge."[1] The OER movement is rooted in MIT's OpenCourseWare project. There are now dozens of repositories that share textbooks, digital resources, and teaching materials. The movement continues to strengthen and gain acceptance. Despite the glut of information supply, textbook publishers continue to increase prices at unsustainable rates.

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Need

According to a study published by the General Accountability Office in 2013, textbook costs rose 82 percent between 2002 and 2012—despite the fact that the overall rate of inflation, represented by the Consumer Price Index, rose only approximately 28 percent during the same time period.[2] The rapid increase in textbook costs has resulted in students increasingly pirating course content, selecting classes and majors based on textbook costs, and sharing their textbooks with friends and classmates.[3]

Over 22,000 students attending Florida public colleges and universities were surveyed on how the cost of textbooks is impacting access to required materials and achievement. Over 66 percent of students reported not purchasing a required textbook due to the high cost, with 38 percent receiving a poor grade and 20 percent failing a course without the required text.[4] Even when students purchase the text, they may not use the text to its full extent, choosing not to take notes or highlight in the book so that they can recoup a percentage of their money by selling it back to the bookstore.

Awareness and Motivation

Awareness of OER as an alternative to expensive textbooks has grown significantly in recent years. In mid-July 2016, the Babson Survey Research Group reported that faculty awareness was 25 percent, a 20 percent increase from the previous year's survey.[5]

Cost savings for students are often cited as the major motivator for faculty to adopt open textbooks in the classroom and are what students tell faculty they most appreciate about open textbooks, according to a recent study of 51 higher education faculty in California. The quality of the content, the ability to repurpose or adapt it, and accessibility for students both financially and through availability of multiple formats (e.g., print, PDF, web) were also mentioned as key motivators.[6] In an international study, faculty and librarians from K-12 schools, community colleges, and colleges/universities reported using OER to get new ideas and inspiration for their teaching nearly twice as often as they used OER in their classrooms. Half of the respondents indicated that staying up-to-date in their subject area and broadening the resources available to students were other significant motivators for using OER.[7]

Academic freedom or choice has also been identified as a motivator. Sue Tashjian, instructional designer at Northern Essex Community College and co-chair of the Massachusetts Community Colleges Go Open Statewide Initiative, states: "One of the most exciting things I've experienced in supporting faculty with OER adoption is freedom! Faculty are no longer designing courses based on a commercial textbook, by which the publisher dictates how the course is delivered. OER gives faculty the flexibility to bring in current and relevant course materials—enabling them to create and/or adapt the content to match learners' needs and their teaching style."[8]



By LISA C. YOUNG, UNA T. DALY, and JASON STONE

Research/Impact

While there is not a great deal of research in regard to student success as new textbooks are adopted, there has been a focus on student success when OER are adopted. Studies have demonstrated that no harm has occurred as a result of the use of OER and that students are performing at least as well as they did with the traditional materials. They have also shown increased student retention and student success using OER.[9] However, one would think if over 50 percent of students who never purchase the text now have access to materials, wouldn't the success rates with early and continued access to materials be higher? John Gibson, a Glendale Community College faculty member who uses OER, has shared that through the use of course analytics, he has found that students are not accessing the materials as he would like in the electronic format.[10] This could lead one to question how students are using electronic course materials and to work toward the development of best practices to share with students for the use of these materials.

John Hilton III has stated: "Because students and faculty members generally find that OER are comparable in quality to traditional learning resources, and that the use of OER does not appear to negatively influence student learning, one must question the value of traditional textbooks. If the average college student spends approximately $1000 per year on textbooks and yet performs scholastically no better than the student who utilizes free OER, what exactly is being purchased with that $1000?"[11]

Future Directions

Tidewater Community College was the first to develop a degree in which an entire associate's degree pathway, called a Z-Degree, can be achieved by taking courses using OER. The college has shared that students are using their cost savings for a number of things, including taking more courses.[12] OER degrees emerged nationally last year at 38 community colleges in 13 states with the launch of the OER Degree Initiative by Achieving the Dream (ATD), the community college reform network. Contributing to further transformation of teaching and learning at the nation's community colleges, Dr. Karen A. Stout, president and CEO of ATD, added: "Extensive use of OER will enable students to have access to more dynamic learning tools and a richer academic experience at a cost that will help more students complete their studies."[13]

The Community College Consortium for Open Educational Resources (CCCOER), with members in 24 U.S. states and Canadian provinces, was founded ten years ago to expand awareness and adoption of OER to enhance teaching and learning. The consortium's diverse membership cites many factors contributing to the growth of open educational practices and resources. Quill West, open education project manager at Pierce College District (Washington) and CCCOER president, states: "Recognizing that every college is going to approach open education in their own way, we help members to advocate for and grow OER adoption through sharing their experiences, tools, and future plans for spreading OER across their institutions. What we do at my college might be vastly different than what works at any other member institution, but by sharing what works and discussing challenges, we enrich the overall community. CCCOER also partners with other advocacy and support organizations such as Achieving the Dream and Lumen Learning to grow the wisdom and proven practices for to-scale adoption of open education."[14]

Conclusion

Though still in its infancy, the OER movement continues to have a significant impact on students, faculty, and the way teaching is occurring. OER can overcome barriers to students' access to course materials while also reducing the cost of higher education and providing opportunities for faculty to customize materials to their curriculum and to students' needs, potentially increasing student success. ■

Notes

1. "OER Defined," Open Educational Resources, William and Flora Hewlett Foundation website, accessed June 13, 2017.
2. U. S. Government Accountability Office, "College Textbooks: Student Have Greater Access to Textbook Information" (GAO-13-368), June 6, 2013, p. 6.
3. Max Denning, "Students Resort to Illegal Means for Acquiring Expensive Textbooks," *The Ithacan*, October 1, 2014; Allie Bidwell, "Report: High Textbook Prices Have College Students Struggling," *U.S. News & World Report*, January 28, 2014; Leila Meyer, "Report: Students Shun New Textbooks to Reduce Education Expenses," *Campus Technology*. August 24, 2016.
4. Florida Virtual Campus, Office of Distance Learning and Student Services, "2016 Student Textbook and Course Materials Survey: Results and Findings," October 7, 2016, p. 5.
5. I. Elaine Allen and Jeff Seaman, "Opening the Textbook: Educational Resources in U.S. Higher Education, 2015–16," Babson Survey Research Group, July 2016.
6. Ozgur Ozdemir and Christina Hendricks, "Instructor and Student Experiences with Open Textbooks, from the California Open Online Library for Education," *Journal of Computing in Higher Education* 29, no. 1 (April 2017).
7. Martin Weller et al., "What Can OER Do for Me? Evaluating the Claims for OER," in Rajiv S. Jhangiani and Robert Biswas-Diener, eds., *Open: The Philosophy and Practices That Are Revolutionizing Education and Science* (London: Ubiquity Press, 2017).
8. Sue Tashjian, personal communication with Una T. Daly, May 26, 2017.
9. John Hilton III, "The Review Project," Open Education Group, accessed June 13, 2107; Ozdemir and Hendricks, "Instructor and Student Experiences with Open Textbooks."
10. John Gibson, personal communication with Lisa C. Young, April 10, 2017.
11. John Hilton III, "Open Educational Resources and College Textbook Choices: A Review of Research on Efficacy and Perceptions," *Educational Technology Research and Development* 64, no. 4 (August 2016).
12. David Wiley, Linda Williams, Daniel DeMarte, and John Hilton, "The Tidewater Z-Degree and the INTRO Model for Sustaining OER Adoption," *Education Policy Analysis Archives* 23, no. 41 (March 2016).
13. Stout quoted in Achieving the Dream, "Achieving the Dream Launches Major National Initiative," press release, June 14, 2016.
14. Quill West, personal communication with Una T. Daly, June 1, 2017.

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Bridging Contemporary and Social Issues for Information Literacy through Instructional Platforms

Librarianship at a fine art and design college requires flexing information-seeking, interpretation, and analytical muscles that differ from those more commonly used in liberal arts or science-related academic programs. The majority of patrons are teaching or enrolled in studio-based classes, creating works of art, and designing materials rather than writing lengthy research papers. They are also undergoing rigorous review—peer-to-peer, professor-to-student, and sometimes industry professional–to-student. As a result, a key issue for me—as the digital initiatives librarian at the Maryland Institute College of Art (MICA)—is how to use technology to bridge contemporary and social issues with information literacy within the context of an art and design college curriculum.

Rethinking Instructional Platforms

I spend a lot of time researching digital tools. I've become an advocate for social media platforms like Twitter, chat tools like Slack, and project management trackers like Asana. I'm only just now exploring GitHub, Git, and Jekyll. Recognizing my own digital knowledge gaps has empowered me to learn new things and make mistakes. This vulnerability has landed me in charge of the library's social media presence and has allowed me to teach workshops such as "Omeka in the Classroom: A Teaching Tool for Exhibition Building and Cultural Literacy" and "Digital Humanities for Art Historians." While contemplating what digital initiatives mean at an art and design college, I'm also thinking about when, how, and where I use computer-based technology in my instruction sessions.

According to Pew Research Center, the most popular social media websites are Facebook (68%), Instagram (28%), Pinterest (26%), LinkedIn (25%), and Twitter (21%). Three-quarters of Facebook users and roughly half of Instagram users visit these sites at least once per day.[1] The popularity of these tools can lead us to have a narrow view of what constitutes social media. In very broad terms, social media can be understood as including any online technology tools that enable people to communicate and to share information and resources easily.[2]

MICA has had a learning management system (LMS) in place for decades, but we are currently moving to an LMS that *looks* and *feels* more like popular social media sites. Our faculty and students have requested an LMS that appeals to their aesthetic taste and focuses on user-centered design. They want their online educational experience to reflect their social online experience and the ease with which they move through those environments. In light of this, I began to ask: "Why not look at *all* online platforms as instructional platforms? Why wait for a new LMS?"

Technology as a Bridge

After being struck by the numerous topics touched on in Beyoncé's visual album *Lemonade* (April 2016), I utilized Springshare's web-based research guide platform LibGuides to develop "Beyoncé's 'Lemonade' and Information Resources." *Lemonade* is an hour and five minutes of music, poetry, and references to history, literature, and art. It is essentially a short film with music rather than traditional dialogue. It required several directors and cinematographers to create a beautifully shot, cohesive narrative story of a woman going through stages of grief, presumably as a result of infidelity, while also addressing social justice issues involving police brutality, Black Lives Matter, and black womanhood and feminism. Though many fans of Beyoncé's music are drawn to *Lemonade*, one can see the aesthetic value in the work even without being a fan.

The contemporary and historical issues Beyoncé presents in *Lemonade* offer a perfect opportunity to discuss research and information through a point of reference that everyone is more or less familiar with. This type of opportunity fits with my practice of critical librarianship as the development of critical thinking and information skills as well as an engagement with "diversity, information ethics, access to information, commodification of information, labor, academic freedom, human rights, engaged citizenry, and neoliberalism."[3]

Some might argue that the topics raised in *Lemonade* are inappropriate for undergraduate students and that addressing them does not abide by the idea of keeping a "neutral" or "safe" classroom setting. In my view, informed by the work of the critical race and feminist theorist bell hooks, treating the classroom as a space in which social justice issues are not discussed may actually lead students from marginalized groups to feel further marginalized and not safe. hooks posits the importance of treating students as whole human beings, with complex lives and experiences, rather than as "seekers after compartmentalized bits of knowledge."[4]

Others in the library and information science field are approaching critical librarianship in a similar way. Kai Alexis Smith recently authored the "Get Out Resource Guide," on the symbolism and social issues alluded to in Jordan Peele's film *Get Out*, and "Hip Hop and Activism February 2017," an event-based guide that provides resources on the genre and activism.

E-Content Editor: **Lisa Janicke Hinchliffe**

Craig Arthur uses hip-hop sampling as a means to discuss plagiarism, changing the traditional punitive narrative to an exploratory process of why we cite our sources.[5]

Since April 2016, when I created "Beyoncé's 'Lemonade' and Information Resources," it has been viewed over 72,000 times. It's been tweeted and shared on Facebook, as well as written about in online and print publications. The guide can and has been used as a basis for discussions on teaching with popular culture. One day after publishing the guide, I wrote "Art Is Information, Part I" on *Medium,* explaining why a librarian is interested in this particular work, ways in which research methodologies could be used for art making, how information informs art, and how our own knowledge informs the way we see and interpret art.[6] Utilizing LibGuides, *Medium,* Facebook, and Twitter, I wanted to send two messages: (1) *Lemonade* is art; and (2) art is information that can be looked at through the lens of critical librarianship.

Technology-Based Active Learning

The MICA library has been embedded in two art history classes with a curatorial focus through Omeka projects that span one academic semester. Both classes were divided into curatorial teams charged with creating online exhibitions and interpretive texts. Omeka is a website publishing platform for digital collections and online exhibitions that can be used collaboratively or individually. The most basic features, such as image cataloging and exhibition building, make Omeka a tool for visual and cultural literacy instruction. Additional digital humanities plug-ins could also be added, including those that explore geographic information systems, mapping, and text analysis.

When I first began teaching Omeka workshops, I quickly realized that undergraduate students did not need help with understanding how to add images, build the exhibitions, or further customize their class websites. The areas where they needed guidance included copyright and metadata. Had I somehow known this in advance and designed this particular instruction session to be a lecture-style presentation on copyright, public domain, Creative Commons, and the Dublin Core metadata schema, for example, it would have been boring not only for the students but also for me. By using a tool like Omeka as a platform for active learning about these issues, I reduced the length of time I talk at students and have a valuable opportunity for students to learn a new tool, which can be added to a resumé or applied when utilizing other digital tools. This sort of work flexes students' information-seeking, interpreting, and analytical muscles, acting as an extension to the curriculum of their course.

Other technology-enabled issues that could be linked to topics librarians traditionally teach are hashtags and advanced searching concepts. Paige Alfonzo explains the ubiquity of hashtags as an almost universal means in which to streamline instruction of authority control, controlled vocabularies, subject headings, keyword searching versus subject searching, indexing, and more.[7] With this instruction, advanced searching concepts naturally emerge in course discussions and student explorations. By working from concepts in social media, librarians can experience what Stephen Brookfield describes as the ways in which social media tools "foster active student engagement, democratize the classroom, and create a participatory learning environment."[8] This kind of learning environment lends itself well to the principles of critical librarianship and speaks not only to our students as whole humans but to this whole human librarian as well.

Conclusion

I had a rather narrow view of how to conduct information literacy instruction sessions for art and design students when I began my current position. With a change in leadership and the influence of a new instructional librarian joining our staff, I had the opportunity to look critically at my practice as a librarian, just as our students are taught to critique themselves and their peers as artists and designers.

Social media has the power to be an integrative place where services and collections meet, making those tools an instructional platform similar to the traditional LMS. All instructional platforms require planning and development as well as participation and engagement. Technology does not replace this work; it creates a whole new set of to-do lists and possibilities. Among the possibilities is space to develop dialogue around contemporary and social issues while sharpening information literacy skills. MICA library patrons are generally teaching and learning in a maker environment. As a librarian in this environment, I'm striving to be a maker as well. ■

Notes

1. Pew Research Center, *Social Media Fact Sheet,* Pew Research Center, Internet & Technology, website, January 12, 2017.
2. M. A. Ralph and L. L. Ralph, "Weapons of Mass Instruction: The Creative Use of Social Media in Improving Pedagogy," *Issues in Informing Science and Information Technology* 10 (2013).
3. Kenny Garcia, "Keeping Up with . . . Critical Librarianship," Association of College and Research Libraries website [June 2015].
4. bell hooks, *Teaching to Transgress: Education as the Practice of Freedom* (New York: Routledge, 1994), 15.
5. Kai Alexis Smith, "Get Out Resource Guide" (last updated June 2, 2017) and "Hip Hop and Activism, February 2017" (last updated February 21, 2017), Cal Poly Pomona University Library website; Brian Mathews, "Hip Hop Librarian Spins Info Lit: An Interview with Craig Arthur," *The Ubiquitous Librarian* (blog), *Chronicle of Higher Education,* July 2, 2015.
6. Jennifer A. Ferretti, "Art Is Information, Part I," *Medium,* April 29, 2016.
7. Paige Alfonzo, "Using Twitter Hashtags for Information Literacy Instruction," *Computers in Libraries* 34, no. 7 (September 2014).
8. Stephen D. Brookfield, "Teaching Students to Think Critically about Social Media," *New Directions for Teaching and Learning* 144 (Winter 2015), 52.

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Digital Sanctuary: Protection and Refuge on the Web?

When I was growing up as a missionary kid, *sanctuary* was defined for me as a place of holiness and worship. It was where you weren't allowed to run or play. You would get dirty looks, or a disapproving *tsk-tsk*, for talking loudly or laughing. There were unwritten rules about how you dressed, how you behaved, and to whom you deferred. The sanctuary itself, the physical space, was designed to be grander than life. The sanctuaries I visited often had tall ceilings adorned with intimidating lighting fixtures; the pulpit was an ornate wood podium flanked by candelabras and throne-like chairs. The sanctuary was designed to inculcate a sense of reverence.

I've had a tempestuous relationship with the idea of sanctuary since rejecting my religious upbringing. But *sanctuary* is a term that keeps coming up as I think about the role of higher education in today's tumultuous social and political context. For me, it has started to mean "refuge" and "protection," drawing inspiration from the sanctuary movement that has seen a recent resurgence. It is with this definition that I want to respond to Michael Caulfield's question: "Can higher education save the web?"[1]

Sanctuary as a place of protection can be traced back to Greek and Roman societies, where churches sometimes harbored people who were under some form of persecution. In medieval Europe, a sanctuary knocker was a church's invitation for sanctuary seekers to signal their request for asylum. In recent times, sanctuary movements in the United States began in the 1980s as thousands of refugees fled civil wars in Central America. John Fife, a reverend at the Southside Presbyterian Church in Tucson, and his congregation provided food, shelter, and medical care to refugees and helped them apply for political asylum, as established by the U.S. Refugee Act of 1980 (Public Law 96-212). When most of the refugees were denied asylum despite meeting the legal criteria,[2] Fife amped up his support for refugees (including bringing refugees across the border), aided by John Corbett, a Quaker who was inspired by church/Christian efforts to help runaway slaves as part of the Underground Railroad in the 1840s and 1850s. The sanctuary movement of the 1980s did not end well for the sanctuary workers: Fife, Corbett, and nine others were arrested and charged with violating multiple federal laws (Corbett was acquitted; Fife was found guilty).[3]

What responsibilities do universities and colleges have in providing sanctuary for student data and for students' digital footprints?

The sanctuary movement has recently resurfaced in response to U.S. President Donald Trump's crackdown on undocumented immigration. As a result, some colleges and universities have declared themselves to be sanctuary campuses for undocumented students. Although the definition of a *sanctuary campus* varies, the declaration typically means that the campus will refuse to comply with requests to grant campus/student access to immigration enforcement officials. The legal ramifications of declaring a sanctuary campus are unclear, but the political statement that higher education institutions have a role to play in protecting students underlies the sanctuary campus designation.

Again, how does this all fit into questions about how higher education can save the web? For too long, universities and colleges have accepted the "terms of service" for how educational technology vendors handle student data. Caulfield noted: "As the financial model of the web formed around the twin pillars of advertising and monetization of personal data, things went awry."[4] This has created an environment that puts students at risk with every click, every login. It disproportionately affects the most vulnerable students: undocumented students, students of color, LGBTQ+ students, and students who live in or on the edges of poverty. These students are prime targets for *digital redlining*: the misuse of data to exclude or exploit groups of people based on specific characteristics in their data.[5] Thus, in higher education, we need to pay attention to the demands we place on students to produce data (e.g., application forms, SIS requests, learning management systems) and to how we care for that data (e.g., storage, transmission). Also, and perhaps most important in response to the influx of "learning-focused" technologies, we need to recognize and deconstruct our perspectives on the relationship of data to our understanding of student learning.

It's time to question assertions that the more data we have on students, the more we will understand their learning. Audrey Watters argues: "We have confused surveillance for care. . . . When you work for a company or an institution that collects or trades data, you're making it easy to surveil people and the stakes are high. They're always high for the most vulnerable. By collecting so much data, you're making it easy to discipline people. You're making it easy to control people. You're putting

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By AMY COLLIER

people at risk. You're putting students at risk."[6] I have seen this in action: educators, technologists, designers, and administrators often are willing to trade student data for measurable signals of impact and can be terribly cavalier about the risks to students' physical and digital safety.

What responsibilities do universities and colleges have in providing sanctuary for student data and for students' digital footprints? How might higher education institutions resist the black box algorithms[7] into which they so freely feed student data? How might "digital" specialists and administrators reflect the caring, protective, and empathetic mindset of sanctuary movements? How might colleges and universities shape, rather than simply adopt, the ways that companies treat data?

We in higher education need to seriously consider how we think about and handle student data, and we need to respectfully and empathetically acknowledge where our practices may cause harm. I believe we must advance our institutions as "digital sanctuaries," and I have proposed an evolving set of seven strategies to do so.[8] Some of these strategies may be considered best practices in terms of data security, FERPA compliance, and IT operations, but some are not yet standard procedure.

1. *Audit student data repositories and policies associated with third-party providers.* Document every "place" that student data goes and what the policies are for handling student data. What third parties have access to student data, why do they have access, and what can they do with the data? Who decides—and how are decisions made—about third-party access to student data? Do students get a say?
2. *Have a standard and well-known policy about how to handle external inquiries for student data and information.* This is less about staff mishandling student data and more about the coercion and intimidation that could yield problematic results if there are no clear guidelines for staff to follow. Even if designated a digital sanctuary, a campus may be legally bound to release some student data, but it should have clear processes and requirements associated with those situations. Staff should understand how and when they can say no to inquiries about students, and campuses should investigate the legal limits of noncompliance with such inquiries.
3. *Provide an audit of data to students who want to know what data is kept on them, how the data is kept, where it is kept, and who else has access.* That is, if students want to know about their data, the institution should be able to give them that information. Better yet, students should be allowed to download every bit of their data so that they can parse it themselves. Consider giving students a chance to rap the sanctuary knocker to signal their desire for more data protections.
4. *Have clear guidelines and regulations for how data is communicated and transmitted between offices.* Campuses can better protect student data transmitted between the people and offices that should have access (e.g., by not transmitting data via email). Campuses should have clear policies and guidelines about the protection of student data on mobile devices.
5. *Take seriously the data policies of third-party vendors.* Don't work with vendors whose contracts stipulate that they can use and share student data without the consent of students or the institution.[9]
6. *Closely examine and rethink student-tracking protocols.* How necessary are learning dashboards? What are the risks of early-warning systems? How problematic are the acceptable use policies? How long does the institution need to keep data? Does it really need all of the data being collected?
7. *Give students technological agency in interacting with the institution.* Implementing a Domain of One's Own initiative, which puts students in the system administrator role for their domain, can be a way to give students more control and protection over their data. This may not be enough, however, since students could easily expose themselves to malicious and dangerous forces (e.g., hackers) through their own domains. A robust educational and mentoring program is also required. As a result, students can learn how to connect their data, via their domains, in ways that are safer and more manageable.

These ideas need to evolve—and I expect they will as we work together to flesh out, question, and develop the strategies. Let us, please, gather student data with more care. Let's use it with more care. Let's share it, save it, obfuscate it, or even delete it permanently with more care. And let's take on a leadership role in conversations about data. It's time for those of us in higher education to lead discussions about how best to provide digital sanctuary—protection and refuge—for students and their data. Who else but us? ■

Notes

1. Michael Caulfield, "Can Higher Education Save the Web?" *EDUCAUSE Review* 52, no. 1 (January/February 2017).
2. This still happens today. See Nicholas Kulish, "Torture Victim, Expecting a U.S. Handshake, Was Given Handcuffs Instead," *New York Times,* June 13, 2017.
3. For more about the origins of the sanctuary movement, see (and listen to) "Church (Sanctuary, Part 1)," episode 249, *99% Invisible,* February 28, 2017.
4. Caulfield, "Can Higher Education Save the Web?"
5. See Chris Gilliard, "Pedagogy and the Logic of Platforms," *EDUCAUSE Review* 52, no. 4 (July/August 2017).
6. Audrey Watters, "Ed-Tech in a Time of Trump," *Hack Education,* February 2, 2017.
7. Frank Pasquale's book *The Black Box Society: The Secret Algorithms That Control Money and Information* (2015) is a must-read.
8. Amy Collier, "'It Should Be Necessary to Start': Critical Digital Pedagogy in Troubled Political Times," *Red Pincushion,* March 3, 2017.
9. See "Privacy Evaluations" from Common Sense Media for some good resources.

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Connecting with Faculty: A Path to CIO Success

In prior *EDUCAUSE Review* Viewpoints columns this year, several of my CIO colleagues offered advice for successful relationships with other institutional stakeholders. For example, Klara Jelinkova implored CIOs to be advocates for the end-to-end experience of students, faculty, and staff, particularly faculty and students who might not have a voice at the table where IT priorities are established. Eric Denna suggested that "CIO" should stand for "Chief Integration Officer," and he advised that CIOs engage actively in the design of enterprise processes. Bruce Maas and Michael Gower advocated for CIOs to use analytics in support of the academic mission and to have strong partnerships with their chief business officers and provosts to drive institutional success.[1] All of my colleagues identified parts of the CIO portfolio that are necessary for success. I would like to propose one more activity for CIOs: true academic engagement with faculty. When done well, this will benefit each of the initiatives identified above.

Next year, 2018, marks forty years that I have been involved with higher education technology. I took my first programming course, "Scientific Programing Using Fortran," in 1978 and have been either consuming or providing technology services to higher education ever since. After I graduated in 1981, UMBC hired me to work in what was then called the Academic Computing Services Department, a name that today sounds outdated. CIOs now are responsible for a broad range of IT-related topics, and most colleges and universities have integrated academic and administrative computing units, with the department names reflecting the broader nature of the services offered. (My organization at UMBC now is called the Division of Information Technology.)

Whatever the name, tracing an organization's "IT ancestry" will most likely lead back to something closely aligned with academic computing, a group created to work *closely* with the academic enterprise to support the use of technology in research and instruction. I emphasize *closely* because this period of academic computing collaboration predated e-mail, videoconferencing, and text messaging and relied on direct interpersonal communication. Many faculty did not use technology; however, those that *were* using technology became true partners in trying to advance the state-of-the-art in their disciplines. This collaboration built strong relationships between IT experts and faculty. To this day, I have benefited from those early years in that I gained tremendous respect for the work of faculty, built lasting friendships, and learned how to work closely with faculty in a variety of disciplines.

My argument for CIOs to prioritize academic engagement focuses on two benefits: (1) building broad and strong relationships with faculty is essential to establishing the trust necessary to undertake and support the major organizational change that arises from significant IT initiatives; and (2) building broad and strong relationships with faculty provides CIOs with a better understanding of the diffuse power structures within institutions, including how decisions are made (or not made) and who makes them. My vision for academic engagement is not a call for more IT governance committees; although these committees are necessary, I don't believe they are sufficient to achieve the broader goals. When CIOs establish governance committees, they often include deans or their staff to represent the "faculty perspective." This makes sense, but it is unlikely to build broad-based faculty support. Instead, IT leaders not only should ask for a seat at the leadership table but also should become active participants in their academic communities.

In my discussions with faculty, a new administrator (whether a CIO or another leader) is viewed as "one of them"—an outside administrator who is brought in, often by other outside administrators, with no sense of the day-to-day experience of faculty. Without deliberate action, CIOs rarely get the opportunity to sit down and interact one-on-one with faculty, in unstructured meetings, to understand their everyday experience with technology or with institutional business processes in general. CIOs need to take deliberate action. Indeed, all of us who are technology leaders should make the time to develop strong interpersonal relationships with faculty and actively engage our institutional academic communities. By doing so, we will learn much about their experiences with technology and campus business processes, and we will find ample opportunities for improvement and collaboration.

For those IT staff who are early in their careers and planning to get a graduate degree, I strongly recommend completing a PhD. Having a PhD is an important way to connect to an academic community, even though simply having a PhD won't be sufficient for success. I didn't finish my PhD, and I now regret that decision. Early in my career, when I was taking graduate classes, I never aspired to be a CIO, and I assumed a PhD would be useful only if I wanted to be part of an academic department. After advancing through higher levels in my institution, and through my involvement outside my institution, I now see how the lack of a PhD removed some career options from my consideration.

CIOs who don't have a PhD and have never been instructors or researchers or have never directly supported faculty may not

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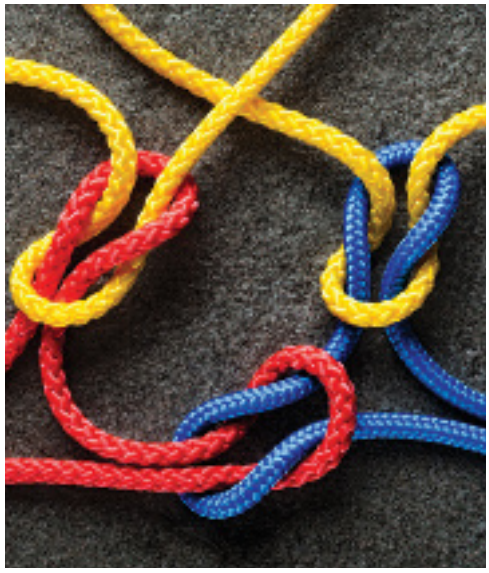
By JACK SUESS

know where to begin. Here's my advice: remember that colleges and universities are social organizations. Unlike corporations or government agencies, they are communities built on a foundation of social trust among members. The first thing a new CIO should do is to arrange to visit various faculty—not only full professors but also assistant and associate professors—in their offices or labs. This offers a better understanding of their research, firsthand observation of what technology they have access to and what technology tools they find useful, and the opportunity to listen to what their pain points are.



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My second recommendation is for CIOs to find ways to get involved in instructional activities. If possible, CIOs should get into the classroom as an instructor; many faculty will gladly find ways to fit in a guest lecturer. I got my start as an instructor early in my career when a faculty member teaching assembly language programming had an emergency and couldn't teach the course. I was one of a few people with that expertise and was asked to teach the course. I learned firsthand how much time went into course preparation and grading, and I gained great respect for faculty who do this very well. This opportunity allowed me to teach the course for many years and helped me connect with faculty in the computer science department.

My third recommendation is for CIOs to find ways to involve themselves in the research experience of faculty. Every institution offers faculty seminars, department colloquia, artistic endeavors, or other experiences where faculty share their scholarship. When possible, CIOs should attend these events, which often have a social component and provide a chance to broaden connections to faculty in different disciplines. If a campus has a vice president of research, CIOs should meet him or her and find out who on campus is doing interesting research or creative work. I have yet to find a faculty member who is not interested in talking about his/her work.

As part of this outreach, CIOs will learn about areas where researchers need help or where business processes are onerous to them. These become opportunities for technology improvement that can help faculty. In my case, in 1996, I was working with faculty doing computational research, and I found out that our Internet bandwidth was insufficient and was impacting research. This was not long after the National Science Foundation (NSF) had launched the vBNS (very high-speed Backbone Network Service) project. I worked with those faculty, submitted a proposal to the NSF, and was fortunate to be selected and become a Principal Investigator (PI). This led to additional work with faculty in which I was PI, co-PI, or staff on various proposals. By participating in and supporting research, I have been able to build strong collaborations that remain to this day.

My fourth and final recommendation is for CIOs to take the time to understand the diffuse power structures at their institutions and learn the informal centers of power. Faculty are always an important constituency, and each institution has a unique organizational culture. Understanding an institution's organizational culture is important to achieving big changes. Some institutions, especially those that use responsibility-centered management, place significant power in the leaders of the respective schools or colleges. Other institutions have a strong shared governance model, where power may be more diffuse across committees and governance groups. My campus has a strong shared governance system, and our faculty senate executive committee has considerable influence. I make a point of knowing who is on that committee and of working closely with faculty leaders to be sure I understand their perspective on major issues before I develop any significant proposals.

Most CIOs occupy a unique position in the higher education institution—with one foot firmly on the academic side and the other firmly on the administrative side. CIOs need to leverage the opportunity that this provides to truly engage with faculty and participate in the academic culture of their institutions. The benefit will be both personal and professional. From a personal standpoint, CIOs will meet and build friendships with faculty who are working to change the lives of students and whose research is making a difference in the world. From a professional level, CIOs will build trust with an important constituency and find ways to improve the experience of faculty through technology or business processes. As a result, CIOs can position themselves to support the organizational change required when undertaking transformative efforts in such areas as student success or the digital transformation of learning. ■

Note

1. Klara Jelinkova, "Spending Our Time and Using Our Voice," *EDUCAUSE Review* 52, no. 1 (January/February 2017); Eric Denna, "Is It Déjà Vu All Over Again?" *EDUCAUSE Review* 52, no. 2 (March/April 2017); Bruce Maas and Michael Gower, "Why Effective Analytics Requires Partnerships," *EDUCAUSE Review* 52, no. 3 (May/June 2017).

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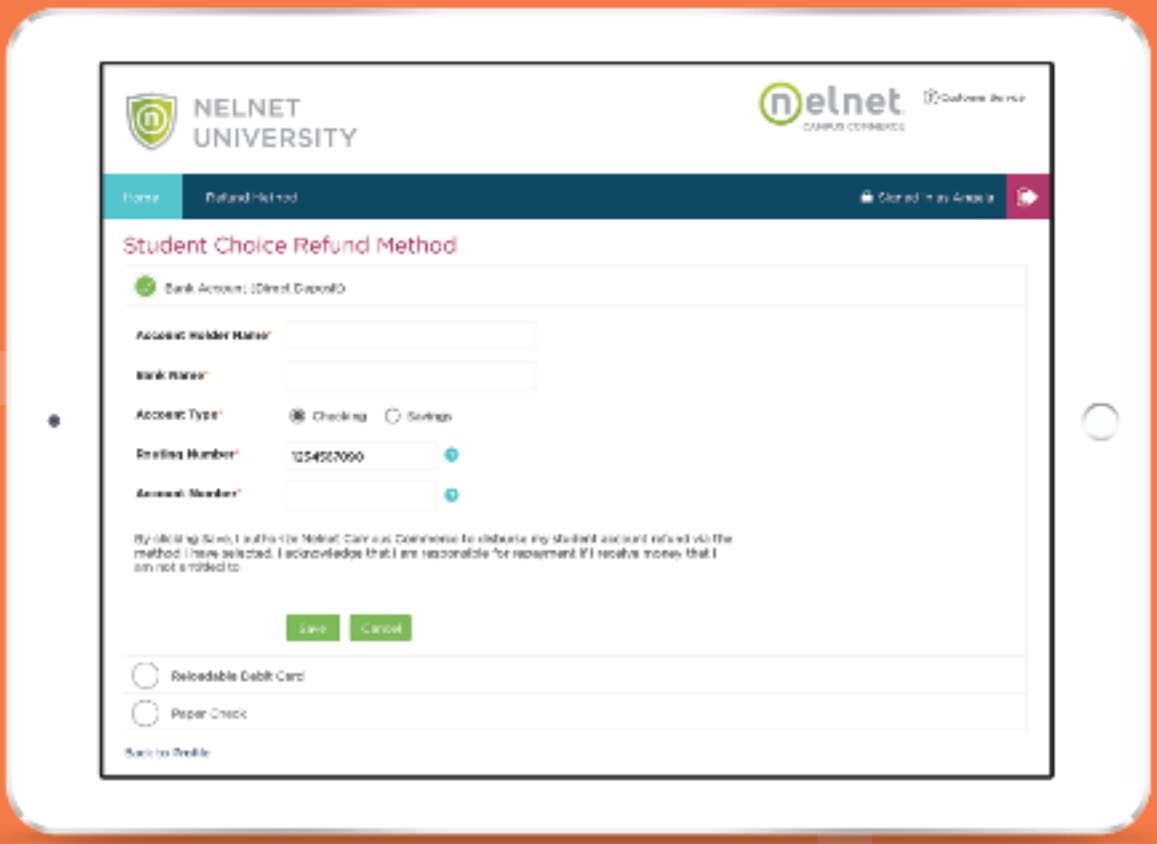

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