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Digital Ethics in Higher Education: 2020

John O’Brien

New technologies, especially those relying on artificial intelligence or data analytics, are exciting but also present ethical challenges that deserve our attention and action. Higher education can and must lead the way.
COLUMNS

4 Special Message: COVID-19
Now
John O’Brien

6 Homepage
[From the President]
Diversity, Equity, and Inclusion (DEI) Matters
Ted Mitchell and John O’Brien

8 Leadership
[Views from the Top]
Mental Health in Higher Education:
Can a Digital Strategy Help?
Elizabeth H. Bradley and Michele M. Tugade

44 The Data
[Trending Numbers]
Higher Ed Digital Ethics: Practice versus Awareness

46 Connections
[Community College Insights]
The Changing Nature of Student Records:
The Interoperable Learner Record
Ricardo Torres

48 E-Content
[All Things Digital]
Earth and Environmental Science Data Partnerships
Erin Robinson

50 New Horizons
[The Technologies Ahead]
Artificial Intelligence: Threat or Opportunity?
Brian Fleming

52 Viewpoints
[Today’s Hot Topics]
The CIO+
Sharon Blanton and Carlos García

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Cover and previous page: Nicolás Ortega

IT professionals rank security analytics as No. 7 in the top 10 strategic technologies for 2020.3

Higher Ed Digital Ethics: Practice versus Awareness

IT and other campus professionals generally agree that their institutions have policies and practices in place to help safeguard data and ensure its ethical use, even though most institutions are lacking in sufficient privacy-focused human resources. In contrast, students and faculty report low levels of awareness around what data is being collected and, especially, how the data is being used.

94% of student affairs, institutional research, and IT professionals agree or strongly agree that privacy rights are respected in conducting student success studies.2

78% of IT professionals agree or strongly agree that their institution develops and maintains sufficiently robust policies and practices to safeguard data used for student success analytics.1

74% of IT professionals agree or strongly agree that their institution has a procedure for vetting third parties or vendors with respect to data security and privacy.1

294% of student affairs, institutional research, and IT professionals agree or strongly agree that privacy rights are respected in conducting student success studies.2

78% of IT professionals agree or strongly agree that their institution develops and maintains sufficiently robust policies and practices to safeguard data used for student success analytics.1

74% of IT professionals agree or strongly agree that their institution has a procedure for vetting third parties or vendors with respect to data security and privacy.1

70% of students are confident in their institution’s ability to safeguard their data.4

61% or more of institutions rate data-informed decision-making and privacy as influential, putting these two trends into the “Most Influential” category.3

60% of faculty understand policies surrounding data use, storage, and protection.4

58% of institutions report having no FTE privacy staff.1

45% of students think they benefit from the collection of their personal data for purposes such as improved services and advising.4

44% of students understand how their institution uses their personal data.4

44% of faculty understand what personal data their institution collects on them.4

25% of institutions report having between 0 and 0.5 FTE privacy staff.1

24% of faculty understand how their institution is using their personal data.4

0%
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The EDUCAUSE community has moved with unparalleled speed to do remarkable work in the shadow of a global pandemic. As I wrote recently in Inside Higher Ed, what the leap to “remote everything” lacks in elegance it has more than made up for in scale. Simply put, technology leaders and staff from colleges and universities have redefined “above and beyond.” Professionals from academic technology, information technology, instructional design, libraries, and elsewhere on campus are literally doing whatever it takes to get their communities through this crisis. Their tireless work illuminates, in a new way, what EDUCAUSE members have been saying for years: technology can no longer be seen as a utility working quietly in the background. Now more than ever, technology is a strategic asset that is vital to the success of every higher education institution.

During this time, the EDUCAUSE community has come alive with ideas, insights, outbursts, creativity, and agility. During one weekend in March, I invited community members to share their personal impressions, and the response was inspiring. Several respondents shared long lists of work that was somehow completed in days—more than enough work for an aggressive three- to five-year campus strategic technology plan. As EDUCAUSE Board Chair and Rutgers University CIO Michele Norin says, “This is a truly unprecedented period in the history of higher education, and campus technology staff have played a pivotal role in making the initial transition successful. The timing was impossible, but staff have handled the unreasonable demands with grace and determination.” Penn State Associate Vice President for Teaching and Learning with Technology and EDUCAUSE board member Jennifer Sparrow outlined the significant work that academic technology staff completed for the “lift and shift” to remote teaching and learning, including offering instructional design open office hours, creating training resources, and addressing emerging challenges with hardware and Wi-Fi access. Creative thinking, she insists, was the key to success. “The team responded to the challenge, listened to the needs of faculty and students, and pivoted, adapted, and changed what they did to meet the need.”

Campus technology staff and leaders have been “doing the right thing” while reserving grand expressions of gratitude for the amazing health care professionals who are putting themselves at personal risk during this health crisis. Rightly so. But given the long history of technologists who work quietly in the background, maybe it’s time for that silence to change.

Our world will be seen in a new light when this crisis fades and our collective heart rate slows. At EDUCAUSE, we are confident that digital transformation (Dx) will be seen differently post-pandemic. Higher education institutions that were already well along on their Dx journey likely found themselves better prepared to adapt to the pandemic. Dx can no longer be considered an aspirational concept. It must be understood as an imperative. And that well-worn, precious notion of campus technology professionals doing work that is noticed only when there is an outage? This too is a thing of the past.

I’ve never been more impressed by a community-in-action. Let’s join in a loud celebration of outstanding higher education technology professionals. They deserve it. Now.

And let’s also dedicate ourselves to the more nuanced but critical message that technology is not a utility. It is a strategic asset, a differentiating value, and a path to achieving institutional goals and stability. It is not just a lifeline that got us through a tricky situation. It is and must increasingly be understood as an integral, strategic part of the successful college or university. Not in the future. Now.

An expanded version of this message can be found online at er.educause.edu/special-message-covid-19.

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

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Diversity, Equity, and Inclusion (DEI) Matters

By Ted Mitchell and John O’Brien

Aspirations for social equity and transformation of students’ lives have been the heart and soul of higher education from its inception. From the children of farmers and laborers seeking social mobility in the 19th century to the rise of higher education participation rates in the last century, a college education simply opens doors. And changes in higher education over the 20th century and into the 21st century—such as the rise of the community college—have continued to create even more hope and opportunity.

At the same time, despite idealistic aspirations and concrete progress, inequities in higher education persist. Indeed, higher education, a sector that leads in so many areas, still has much progress to make in leading the way for diversity, equity, and inclusion (DEI).

The Work Before Us

Until we reach a point at which those who lead and staff our colleges and universities more closely mirror those we serve, we have real work to do, and it begins with taking a look in that mirror and cultivating organizations that are quipped to serve all students, now and in the future.

Diverse representation is lacking in president/chancellor positions. According to the latest American Council on Education (ACE) study of college presidents, the typical president “continues to be a white male in his early 60s.” Although the percentage of presidencies held by women (30%) in 2016 was up four percentage points from 2011, at this rate, women will continue to hold fewer than half of presidencies for the next several decades. Presidents of color increased at the same slow rate, holding only 17% of presidencies in 2016. Meanwhile, only 5% of presidents are women of color.

Diverse representation is lacking in campus chief information officer positions. Like presidents, the higher education IT workforce is predominantly white (83%), a full 13 percentage points higher than the civilian IT labor force. And when it comes to the top job in higher education IT, according to the 2019 EDUCAUSE IT Workforce Study, the percentage of female CIOs has actually declined, from 27% in 2016 to 23% in 2018. Hopes that a strong pipeline of women in the IT profession would change this trend crumbled when a 2016 study by Girls Who Code and Accenture projected that without action, the number of women in the computing workforce will decline from 24% to 22% by 2025. EDUCAUSE research does show increasing numbers of women at the manager and staff levels, but others have pointed out that pipeline hopes may be pipe dreams. Individuals from underrepresented groups who make their way into the pipeline often end up being relegated to lower levels of pay and more operational positions, what the National Center for Women & Information Technology (NCWIT) has called “sub-field” segregation.

Inequities create barriers for institutional staff and leaders. We might think the ultimate goal is simply to see more diverse representation in certain jobs, but the reality is that the experiences of people in those jobs continue to be different for some, including men and women of color. In the broader technology field, a study by the Kapor Center for Social Impact on why people leave the tech field found that “unfair treatment” is “the single largest driver of turnover.” In particular, the study finds that men of color are more likely than white and Asian men to leave due to unfairness and are twice as likely as white or Asian men and women to have experienced stereotyping, while women of color are passed over for promotion more than any other group.

Even after women and people of color successfully ascend to higher positions of leadership, they continue to experience barriers and hardships as they navigate social and cultural leadership biases. In a 2018 brief, ACE explored the experiences of four women of color in college presidencies. These presidents describe occasions when their fitness...
for leadership was questioned on the basis of their race and/or gender, highlighting the persistent struggle against cultural perceptions of “what a leader is supposed to look like.”

**Solutions**

Ultimately, the cornerstone of efforts to raise awareness, increase diversity, and advance equity is to engender a prevailing sense of inclusivity across our organizations at the highest levels and the furthest corners of our institutions. With this in mind, ACE’s “Moving the Needle” initiative and EDUCAUSE’s “CIO Commitment Statement” both focus on broad buy-in and personal awareness to make a lasting cultural difference.

**Actions to Take:**
Sign ACE’s Moving the Needle Pledge, and then follow your pledge with these additional actions:

- Use ACE’s suggested messaging for promoting the Moving the Needle initiative through your social media channels.
- Share ACE’s press release template with your communications office.
- Tailor ACE’s “Dear Colleague” letter for sharing with your higher education leadership colleagues.
- Join your state’s ACE Women’s Network, either as a member, a program participant, or a presidential sponsor.

Sign EDUCAUSE’s CIO’s Commitment on Diversity, Equity, and Inclusion, and then follow up with these additional actions:

- Join EDUCAUSE’s DEI-focused Community Groups for peer-based discussions on these topics: Diversity in IT; IT Accessibility; LGBTQIA in IT; Women in IT; and Young Professionals.
- Subscribe to the National Center for Women & Information Technology newsletter.
- Visit EDUCAUSE’s DEI Topic Page for additional reading and resources on DEI in higher education IT.

**Collaboration between IT and Institutional Leaders**

In higher education we regularly acknowledge that we can accomplish more together than we ever can on our own. DEI efforts will be most effective when they are institution-wide. “Pockets of excellence” are surely excellent for those in the pockets but perhaps not for others. We believe that real and lasting change happens when presidents and chancellors work closely with CIOs, provosts, and other C-suite leaders—and when this work is guided by a chief diversity officer who can see above, below, and around campus territories and divisions.

**Notes**


Ted Mitchell (pmitchell@acm.org) is President of the American Council on Education (ACE). John O’Brien (jobrien@educause.edu) is President and CEO of EDUCAUSE.

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Many young adults in higher education face substantial adjustments throughout their undergraduate years. Epidemiologically, early adulthood (18–25 years old) is the peak age at which serious mental health disorders emerge. Moreover, many of these students experience situational depression as they transition to higher education. During this time, they have to largely replace parental support with peer support structures—a challenge that is compounded by academic pressure. Given these factors, along with increased awareness of mental health, the percentage of students reporting mental health disorders has risen precipitously. Data from the American College Health Association in 2019 indicate that one in three college students reported some kind of mental health disorder and more than 40 percent sought mental health treatment at some point within the four years of their undergraduate education. For comparison, only one in ten students reported a mental health disorder in the early 2000s.1

With this increased prevalence of reported mental health disorders and expectations on the part of students and parents for accessible treatment, higher education institutions have been scrambling to provide more services with limited mental health staff, time, and overall resources. As a result, they have been innovative. In addition to offering individual therapy including cognitive behavioral therapy, many often offer group therapy, which can be an effective and efficient way to reach more students with extant, finite resources.

Despite the increased awareness of mental health, some students still do not seek needed treatment. In particular, students who feel a stigma associated with having mental health issues or using services may depend on family and friends in lieu of formal services. Studies have indicated that male students, students of color, and international students have less positive health-seeking attitudes than their counterparts and thus have lower utilization, despite ongoing needs.2 Hence, addressing the problem of making mental health services accessible to students requires finding ways to deliver services with less stigma, particularly for some groups.

Technology may help expand mental health services to those who seek support and may also help reach students who otherwise resist seeking treatment.

In addition to using texting or traditional internet technology, digital mental health services can also be packaged with wearable devices for ambulatory assessment of needs. Such apps might have built-in sensors to collect information on typical behavior patterns and to signal detected behavioral changes that may be concerning (e.g., changes in voice or speech tone, disturbances in sleep patterns, changes in typing speed or general activity levels). Some apps are stand-alone programs that focus on improving knowledge, memory, or thinking skills; other apps can be used to connect students to a peer counselor or to a health care professional.

For students who are having trouble adjusting to college, digital technologies that apply principles of positive psychology can help
increase resilience, happiness, and well-being.\textsuperscript{5} Some tools deliver interventions online as individual exercises and present users with daily sets of activities. A recent randomized, controlled trial evaluated the efficacy of using an app that focused on techniques grounded in positive psychological interventions (e.g., gratitude, kindness, strengths-building), cognitive-behavioral therapy, and/or mindfulness-based stress-reduction techniques. Participants who used the app for two or three activities per week over an eight-week period showed post-intervention decreases in anxiety and depression and increases in resilience, compared with an online psychoeducational learning comparison group.\textsuperscript{7}

Internet Cognitive Behavioral Therapy (iCBT) also shows promising results. With iCBT, participants use their home computers to review psychoeducational material and practice CBT exercises. Such programs teach participants core cognitive skills (e.g., recognizing affective biases in information processing), as well as behavioral skills (e.g., problem-solving strategies). iCBT can include informational and supportive automated emails, brief weekly phone calls with a therapist providing encouragement and clarification of exercises, text-based communication, and longer web-based CBT sessions. Although iCBT involves a therapist, the therapist’s time is far less than would be required in traditional face-to-face methods. In randomized controlled trials, iCBT has been shown to have approximately equivalent efficacy as face-to-face CBT.\textsuperscript{8}

Although the evidence base for digital mental health interventions for college and university students remains limited, current meta-analyses suggest that digital mental health technologies can improve depression, anxiety, and stress levels.\textsuperscript{9} Given this early favorable outcome data, larger and more rigorous studies with longitudinal follow-up are warranted. Better data on which interventions are most effective for which groups of students would be particularly helpful, so that digital mental health programs can be tailored to maximize student engagement and learning.

With growing interest in mental health technologies, researchers are evaluating potential drawbacks and are offering solutions. Some adverse effects reported by clients include technical difficulties, dissatisfaction, and implementation problems—although these negative aspects can be minimized with therapist support to address concerns, provide feedback, and facilitate understanding.

Further research will be needed to evaluate these unintended negative effects and other potential concerns, including data privacy and the regulation of mental health technologies.

Technology-based interventions could revolutionize mental health care in higher education. With innovative approaches, colleges and universities can envision new intervention paradigms that build on traditional models to improve mental health and well-being in the lives of their students.

\textbf{Notes}

1. American College Health Association, National College Health Assessment II: Reference Group Executive Summary, Fall 2009 (Linthicum, MD: ACHA, 2009), American College Health Association, National College Health Assessment II: Undergraduate Student Executive Summary, Spring 2019 (Silver Spring, MD: ACHA, 2019).
DIGITAL ETHICS IN HIGHER EDUCATION 2020

By John O’Brien

Photo illustrations by Nicolás Ortega
SOME NEWS STORIES ARE HARD TO FORGET,

like the one from a decade ago about a teenager who was texting while walking and fell into an open manhole on the street. Many headlines made fun of the scraped-up fifteen-year-old. But most of the news stories were focused on the people involved and thus didn’t see the bigger story about the place where humans and technology clash—or, in this case, crash.¹

In 2020, I remember this story and see it as perhaps the perfect metaphor for the challenge of digital ethics. New technologies, many that depend on private data or emerging artificial intelligence (AI) applications, are being rolled out with enthusiastic abandon. These dazzling technologies capture our attention and inspire our imagination. Meanwhile, fascinated by these developments, we may soon see the ground drop out from under us. We need to find a way to pay attention to both the rapid technology innovations and the very real implications for the people who use them—or, as some would say, the people who are used by them.

I believe we are at a crucial point in the evolution of technology. We must come to grips with digital ethics, which I define simply as “doing the right thing at the intersection of technology innovation and accepted social values.” This is a straightforward–enough definition; however, given the speed of technology change and the relativity of social values, even a simple definition may be trickier than it seems. For example, at the point where they clash, the desire for the latest data-powered apps and the desire for fiercely protected privacy reveal significant ethical fault lines. Which desire prevails? And while we contemplate this question, the development of new apps continues.
**A Century of Profound Technology Change**

When we talk about technology innovation, we tend to look forward, imagining our contemporary circumstances to be utterly unprecedented. Yet we are not the first to deal with “disruptive,” technology-driven change. Nor are we the first who must cope with the scale of the ethical implications of these developments. We have much to learn from the analog technology innovations of an earlier century; and there’s hardly a better moment in time to consider than the Great Exhibition in London in 1851.

The Great Exhibition was so popular that its profits funded several public museums still operating in the United Kingdom today, and the spectacle was so significant that the equivalent of one-third of the population of Great Britain came to London to see the exhibition. It was arguably the beginning of the technology optimism we still see today, the conviction that no problem was so grand that a new, marvelous invention couldn’t present a solution. Representative medals were awarded to a telescope, early daguerreotypes, and even a precursor to the fax machine. Along with these recognizable innovations, there were also truly strange products on display, like the “tempest prognosticator”: an enterprising inventor discovered that leeches responded to rapid changes in barometric pressure in a way that could be rigged to trip a trigger that would sound a bell, thereby warning of an impending storm. Also on display at the Great Exhibition was an example of William Bally’s busts used to illustrate concepts of the then much-hyped pseudo-science of phrenology, the belief that the size and the shape of the skull are an indicator of someone’s character and mental abilities.

This was the century of invention and also the century of quackery of all kinds. From magnetic corsets to electric belts, products promised amazing curative properties for nervous disorders, indigestion, rheumatism, sleeplessness, and “worn-out Stomach.” Emerging technologies based on the properties of electromagnetism were being created with little regulation and countless empty promises—even as the science was still being figured out. We may think the concept of tech hype arose in the 21st century, but the 19th century revealed early masters of deploying innovations based on an incomplete understanding of science. The discoveries of polonium and radium chloride were followed in turn by a wave of radioactive quackery that included radium-infused toothpaste, “Tho-Radia” cosmetic products promising a youthful glow, and even (now strangely redundant) radium cigarettes. The Vita Radium Suppositories promised “weak discouraged men” that they would soon “bubble over with joyous vitality.”

One attendee of the Great Exhibition was not impressed. Karl Marx saw the exhibition as proof of the damage caused by technology automation and concluded that the exhibition revealed an essentially exploitative agenda with nothing short of violent implications. Arising at this same time were the original Luddites—which does not refer to people with a reluctance to use technology, as the term is understood today. Instead, the Luddites were responding (violently) to the introduction of new mechanical looms in the wool industry, very literally pushing back against technology that was costing people jobs, ruining their livelihoods, and circumventing standard labor practices.

A powerful artifact of the dark side of 19th-century technology innovation can be found in Mary Shelley’s remarkable novel *Frankenstein*, published in 1818 in the shadow of science.
It’s not practicable to think we can simply halt technology innovation, taking the equivalent of a musical grand pause, while we figure out all the ethical implications.

of the Luddite riots. Though the book features a stitched-together, reanimated corpse, it is actually an intensely sophisticated discussion of ethics and technology. Dr. Frankenstein recklessly uses technology that he does not fully understand and without thinking through the deeper implications. He creates life and then abandons his own creation when things get difficult. The tragedy of the novel is his ethical failure and the suffering that results. Perhaps the most meaningful summary of the book is also the simplest: *Just because you can do something with technology doesn’t mean you should.*

**Excitement**

Let’s return to the metaphor I used to start this article. Multi-tasking by walking and texting at the same time is a poor choice. Whenever we focus too much on the technology, to the exclusion of everything else, things tend not to end well. However, it’s not practicable to think we can simply halt technology innovation, taking the equivalent of a musical grand pause, while we figure out all the ethical implications. In this case, we need to multi-task in an additive way, not to lessen either our excitement or our caution but to attend to both. We can be deeply concerned about digital ethics and at the same time be genuinely excited about the digital transformation clearly underway in higher education. We can be energized by new technologies while we stay fully aware of the privacy and ethical considerations. The key is balance.

Those of us working in higher education information technology often find it easy to be exhilarated about the ways that technology innovation has advanced, and will continue to advance, academia. We recognize the important role that technology professionals play when they work strategically and collaboratively, offering traction in solving some of the most intractable institutional challenges. The EDUCAUSE Top 10 IT Issues for 2020 reflect this hope and excitement, with institutional priorities like student retention/completion, student-centric higher education, improved enrollment, and higher education affordability joining more traditional IT issues. Advances in technology will not single-handedly move these needles, but in the larger enabling context of digital transformation, new technologies may be the most promising hope in a challenge-filled landscape. Even a quick glance at the EDUCAUSE Horizon Report reflects the excitement afoot, with discussions of analytics, mixed reality, AI and virtual assistants, adaptive learning, and more.

Data-powered predictive analytics—including adaptive learning and student success advising technologies—tops the list of promising technologies. In addition, many new applications rely on AI or machine learning innovations to help students succeed and to help institutions work more efficiently and save money that can be repurposed toward their mission. One example of analytics and artificial intelligence coming together in a student-centric way is the emerging class of chatbot applications, from Georgia Tech’s “Jill Watson” teaching assistant in 2016 to more recent examples like Deakin University’s Genie app or Georgia State University’s Pounce chatbox, both of which help students get quick answers and navigate their way through processes and also produce concrete institutional results in vexing areas like “summer melt.” The Pounce story is just the latest chapter of how GSU is using predictive analytics as part of a broader program to increase retention and graduation rates and eliminate the achievement/opportunity gap.

Finally, numerous technologies promise to intensify student engagement in learning. Conversations about games, simulations, and interactive problem-solving have been going on for a long time, but the growth of commercial augmented and virtual reality technologies suggests that dramatic change could be around the corner. EDUCAUSE research reveals that augmented and virtual reality technologies are expected to be deployed institution-wide at 40 percent of institutions by 2023 (see figure 1).

**Caution**

It’s not a contradiction to be both excited and cautious at the same time; in fact, this seems to be the state of affairs for technology professionals. I would even argue that technology innovators who don’t
hold both of these thoughts in their head at the same time are likely not paying attention—or are letting the drumbeat of hype drown out the cautionary voices. It’s time to listen to these quieter voices and carefully consider the question of digital ethics.

Before focusing on higher education, let’s step back and understand that concerns about digital ethics extend far beyond any single context, enterprise, or industry. Readers of Shelly’s Frankenstein will find many of today’s news stories to be very familiar. In 2018, Chinese scientists created the world’s first genetically modified humans: twins “Lulu and Nana.” Although the scientists have been sentenced to jail terms and fines for their actions, at least one Russian scientist plans to continue the work. Meanwhile, Yale scientists have been conducting experiments to reanimate mammalian brains. The scientists are reported to be working quite cautiously, at one point shutting down an experiment because of a slim chance that some level of consciousness in an animal brain might be present. But as Nita Farahany, a law scholar and ethicist at Duke University, noted: “It’s a total gray zone.” Hank Greely, a law professor and ethicist at Stanford University, added that a scientist with less of an ethical compass will inevitably experiment with human brains. Whether we consider technologies that allow scientists to extend the life of brains or technologies that enable people to cut lives short with 3D printed guns, there is plenty to kindle concern among ethicists and non-ethicists alike.

The consequences of genetically modified babies and reanimated brains may seem unclear and far off, but weaponized artificial intelligence is already here, and it is rapidly advancing. In 2019, OpenAI created an AI language model that was so effective in generating believable text that OpenAI researchers at first decided it was dangerous and should be shared only in stages; in November 2019, seeing “no strong evidence of misuse,” they released the full system: TalkToTransformer.com. Shortly after it was made available, I typed in “I am concerned about digital ethics because.” The AI language model completed my thought this way: “I am concerned about digital ethics because of the impact of technological developments, particularly the rapid developments in digital media, in online communities. I am particularly concerned about the growth of the abuse of free speech online.” This was followed by a fairly well-spoken paragraph on specific UK regulations and their implications. Impressive. Encouraged by this success, I next typed in “Digital ethics concerns me.” The results of this very similar prompt were confoundingly different. This time the AI model wrote: “Digital ethics concerns me in the way I can’t

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10. For a good review of both the early “hoopla” of Jill Watson the TA and more recent versions, see Margaret Tate, “Jill Watson’s Terrific Twos,” Georgia Tech (website), July 30, 2018.

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Figure 1. Augmented and Virtual Reality for Teaching and Learning

<table>
<thead>
<tr>
<th>We predict</th>
<th>that as many as 40% of institutions will have institution-wide deployment of these technologies by 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanding an existing deployment</td>
<td>9%</td>
</tr>
<tr>
<td>Already deployed institution-wide</td>
<td>1%</td>
</tr>
<tr>
<td>Tracking, not deploying or piloting</td>
<td>29%</td>
</tr>
<tr>
<td>Planning/piloting deployment</td>
<td>30%</td>
</tr>
<tr>
<td>Don’t know what this technology is</td>
<td>8%</td>
</tr>
<tr>
<td>No actions planned in 2018</td>
<td>23%</td>
</tr>
</tbody>
</table>

Source: EDUCAUSE Center for Analysis and Research (ECAR), “2018 Strategic Technologies: Data Table.”
While bots of various kinds are being deployed at higher education institutions with positive outcomes, they are being used elsewhere in ethically problematic ways.

In any case, the next generation of mass, personalized, AI-generated phishing attempts will be far harder to spot. There is a terrifying signal of the future in the August 2019 story of a fake phone call that tricked one company out of $243,000 with an AI-produced impersonation of its CEO demanding a bank transfer. Deepfakes are already causing problems on an international scale. As deepfake-Obama observes in a viral video, new AI technologies can generate fabricated videos in which “anyone is saying anything at any point in time—even if they would never say those things.” There is already much speculation on the potential geo-political mischief that deepfakes could cause (imagine the 1938 War of the Worlds broadcast scare, but with a more convincing presentation and with nuclear weapons). Election manipulation, riots, and regional instability are all very real possibilities.

Celebrities are currently the biggest targets of deepfakes, but any college or university professional reading the chilling story of Noelle Martin will realize just how high the stakes could be. When she was a student, Martin was curious about who might be uploading her photos, so she used a reverse Google image search to find out. Instead of discovering that friends had uploaded her pictures on social media, she found hundreds of postings of her personal pictures on pornographic sites, along with photos with her face added to the bodies of porn actresses. Deepfake videos of students could have significant consequences for an institution, especially considering that the perpetrator could well be a student on the same campus.

Chatbots have received a lot of attention, especially recently. While bots of various kinds are being deployed at higher education institutions with positive outcomes, they are being used elsewhere in ethically problematic ways.

14. See also the Harry Potter AI-generated narrative producing such sentences as “Leathery sheets of rain lashed at Harry’s ghost as he walked across the grounds towards the castle. Ron was standing there and doing a kind of frenzied tap dance. He saw Harry and immediately began to eat Hermione’s family.” Rosie McCall, “AI Attempts to Write Harry Potter and It Goes Hilariously Wrong,” IFLScience, December 14, 2017.
16. Many scenarios involve a national or world leader shown on video doing or saying something provocative. Ironically, one very real coup linked to a suspicious video in Gabon was actually a real video that people were convinced was a deepfake. See Karen Hao, “The Biggest Threat of Deepfakes Isn’t the Deepfakes Themselves,” MIT Technology Review, October 10, 2019.
and parents were urged to destroy the toy. In spite of the backlash, Hello Barbie is still around (and listening), while the market for connected smart toys has grown, not slowed. Interestingly, the company whose technology was incorporated into Hello Barbie changed its name to PullString, and in 2019 it was reportedly acquired by Apple to be part of their AI strategy.18

In March 2016, not long after the introduction of Hello Barbie, the chatbot Tay was released by Microsoft on Twitter. Tay was “designed to engage and entertain people where they connect with each other online through casual and playful conversation.” Tay began cheerily declaring that “humans are supercool,” but within 24 hours Tay was parroting racist, homophobic, and Nazi propaganda. After being suspended for nearly a week, the chatbot came back online again briefly, only to confuse and offend a few more people before falling into a fatal loop, endlessly repeating what might, in retrospect, be prophetic: “You are too fast, please take a rest.” Tay was given a permanent rest, and many experts scratched their heads as to why Microsoft released the bot before anticipating the possibilities more accurately.19

The Tay story of artificial intelligence released too fast tops them all because it was so dramatic and so publicly visible. But in the competitive world of technology products, asking for forgiveness later may be easier than taking the time to anticipate all that could go wrong, especially given pressures to be first-to-market. As chatbots and AI products are released, the more concerning issues are the far-less-obvious examples of subtle discrimination, racism, and flawed data being built into algorithms that remain opaque to those who use them.

For example, as smart speakers and digital assistants continue to become more prevalent, ethical concerns are increasingly a global concern. A UNESCO study, titled “I’d Blush If I Could,” focused on gender divides built into, and exacerbated by, digital assistants. In response to the remark “You’re a bitch,” Apple’s Siri responded: “I’d blush if I could.” Amazon’s Alexa replied: “Well, thanks for the feedback.” Microsoft’s Cortana said: “Well, that’s not going to get us anywhere.” And Google Home (also Google Assistant) answered: “My apologies, I don’t understand.” The report observes that these AI responses come from applications built by “overwhelmingly male engineering teams” who “cause their feminised digital assistants to greet verbal abuse with catch-me-if-you-can flirtation.” As a result of criticism, Siri’s responses have evolved, and “she” now replies to abusive statements differently (though the report suggests even the new responses continue to be submissive).20

Responding passively to suggestive or abusive comments reinforces a subservient role for women and signals that the inappropriate comments are acceptable. Steve Worswick, developer of the award-winning Mitsuku chatbot, writes about ethical implications of chatbots from personal experience and reports that “abusive messages, swearing and sex talk” make up around 30 percent of the input Mitsuku receives. Perhaps there simply is no rational reason to believe that the technologies we invent are likely to solve the shortcomings involved in humanity itself. As Kentaro Toyama says in Geek Heresy: “Brilliant technology is not enough to save us from ourselves.” The technologies and virtual personalities we create tend to amplify our human shortcomings, not eliminate them.

20. “I’d blush if I could: Closing Gender Divides in Digital Skills through Education” (EQUALS and UNESCO, 2019).
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human shortcomings, not eliminate them.21

There are ethical implications for many if not all of the technologies that are emerging and, of course, unresolved ethical issues with the internet itself—including the digital divides that have been identified and, some would say, ignored for a long time.22 However, the cluster of technologies that fall under the general category of artificial intelligence understandably get the most attention. In May 2017, Forbes reported that the use of digital assistants was on the rise, especially among business executives and millennials, and that nearly one-third of consumers couldn’t say for sure if their last customer service interaction was with a person or a bot. In April 2018, Gartner suggested that in 2020, the average person will have more conversations with bots than with their spouse.23

In the face of this inexorable march, several powerful voices have come forward arguing for caution. Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy, written by Cathy O’Neil in early 2016, continues to be relevant and illuminating. O’Neil’s book revolves around her insight that “algorithms are opinions embedded in code,” in distinct contrast to the belief that algorithms are based on—and produce—indisputable facts. The subjective inputs embedded into algorithms explain the bias and discrimination we see too often in outputs—complicated and frustrated by the fact that these algorithms are opaque and don’t allow an appeal if someone’s life is negatively impacted by a decision based on the algorithms. O’Neil insists that the inherent opinions in the code are even more corrosive because they are obscured by the dazzle of technology—all very ironic since many of the applications she critiques in the book are intended (and marketed) as tools to reduce human bias and make fairer decisions. Defining a weapon of math destruction as a harmful application with “opacity, scale, and damage,” she goes on to highlight a number of them in detail (including U.S. News higher education rankings). Recently, one non-profit that originally supported algorithmic risk assessment before her book was published reversed its position.24 O’Neill argues that if big data had been used in the 1960s as part of the college application process, women would still be under-represented in higher education because the algorithm would have been trained by looking at the men who were then over-represented.

In 2018, Safiya Umoja Noble’s book Algorithms of Oppression: How Search Engines Reinforce Racism intensified the attention paid to algorithmic bias, in this case looking at search engines, which are increasingly the conduit through which we arrive at our understanding of the world around us. Her focus on “technological redlining” concentrates on how search engines suggest ways for us to complete our searches (and our sentences). Noble provides seemingly endless examples of how Google’s search engine reinforces stereotypes, especially in searches for “black girls,” “Latinas,” and “Asian girls.” She also demonstrates that internet searching played a key role in pointing Dylann Roof to the racist ideas.

22 Bryan Alexander, “Higher Education, Digital Divides, and a Balkanized Internet,” EDUCAUSE Review 52, no. 6 (November/December 2017). These divides have grown wider as a result of the transition to emergency remote learning during the COVID-19 pandemic.
Upcoming Online Events

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June 2 and 4

EDUCAUSE Institute New IT Managers Program
June 15–July 27 | Online

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June 23 and 25

Enterprise Analytics Summit Online
July 28 and 30

EDUCAUSE Annual Conference
October 26–29 | Boston, MA and Online

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Several AI applications claim to put the power of artificial intelligence in the hands of the people.

that led him to murder nine African Americans while they worshipped in South Carolina. Finally, Noble also refers to a Washington Post story saying that Google’s top search result for “final election results” regarding the 2016 presidential election pointed to a “news” site incorrectly declaring that Donald Trump won both the electoral and the popular vote. While there is no doubt that Google has worked to address these issues, in 2019 at least one researcher suggested that the problems persisted and that reducing autocomplete functionality does not address the root problem.

Next, in 2019, Shoshana Zuboff’s book *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* continued the conversation, with a dense and chilling exploration of the degree to which the unethical use of information extends beyond algorithms and beyond search engines all the way to becoming a “rogue mutation” of capitalism. This expansive book defies any easy summary (e.g., the definition of surveillance capitalism is actually eight definitions). Zuboff unrelentingly explores surveillance and the use and misuse of data from the perspective of what she considers to be the key questions we must address: “Who knows? Who decides? Who decides who decides?” Along with asking questions about what is going on and who has the power to make decisions, she suggests that just as the Industrial Revolution ravaged the natural world, this new form of capitalism threatens humanity by claiming “human experience as free raw material for hidden commercial practices of extraction, prediction, and sales.” This process, she argues, is currently underway, with very little regulation or control.

In the time between O’Neil’s book and Zuboff’s book, the march of new technologies quickened, with examples that include the pernicious and the ridiculous. Where to start? The list grows weekly.

**The March of the Apps**

While not focused on higher education, several AI applications claim to put the power of artificial intelligence in the hands of the people. For example, the Mei mobile messaging app promises “to help users become the best version of themselves by putting AI, data, and even other people easily within the reach of anyone with a smartphone.” The app replaces a phone’s texting functionality and provides analytics about the texts sent and received. Marketed as a “relationship assistant,” Mei provides a percentage assessment about whether people you text may or may not “have a crush” on you. Using text analysis, the app goes even further, giving advice on how to raise your crush quotient (e.g., “Thomas is more of a do-er, so talk less and do more”).

Meanwhile, the now-defunct

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Predictim app allowed individuals to scan the web footprint and social media of a prospective babysitter and determine how risky a choice the person might be, based on an algorithm scanning for signs of bullying/harassment, disrespectful attitude, explicit content, and drug use. These examples may seem inconsequential—unless, of course, you are the one whose data is being scanned and you are the one being judged and found wanting.

It’s very easy to drift from here to similar but more dramatically problematic examples, such as the controversial “gaydar” artificial intelligence that higher education researchers developed, claiming they can determine whether someone is straight or gay based solely on scanning a face. And then there is the deeply problematic face-scanning application called Faception, the “first-to-technology and first-to-market” app with “proprietary computer vision and machine learning technology for profiling people and revealing their personality based only on their facial image.” The company is blunt that theirs is a for-profit pitch and that this is a “multi-billion-dollar opportunity.”

Another company is Clearview AI. Following up on his iPhone app that let people put Donald Trump’s hair on other people’s photos, Hoan Ton-That developed “a tool that could end your ability to walk down the street anonymously and provided it to hundreds of law enforcement agencies.”

Al Gidari, a privacy professor at Stanford Law School, sees this as the beginning of an uncomfortable trend: “It’s creepy what they’re doing, but there will be many more of these companies. There is no monopoly on math . . . . Absent a very strong federal privacy law, we’re all screwed.”

Writing about facial recognition, Heather Murphy summed up the pressure to profit: “And all around Silicon Valley . . . entrepreneurs were talking about faces as if they were gold waiting to be mined.”

Facial-recognition applications continue to proliferate, even while the accuracy of the technology is evolving. In the United States, a December 2019 National Institute of Standards and Technology study found facial recognition to be flawed, confirming “popular commercial systems to be biased on race and gender.”

While studies like this in the United States and the United Kingdom cause a stir, viral videos like the “racist soap dispenser” video, viewed by millions, add an exclamation mark to the story and humanize the ethical issues to a much broader audience.

Another powerful way to highlight the human impact that follows from the opacity of algorithms is Kate Crawford and Trevor Paglen’s compelling article “Excavating AI.” The authors dig into the practical matter of how AI systems are trained, looking at the “canonical training set” of images called ImageNet, which consists of more than 14 million labeled images. Crawford and Paglen find that the process of labeling and categorizing is not only flawed but sometimes “problematic, offensive, and

34. Tom Hale, “This Viral Video of a Racist Soap Dispenser Reveals a Much, Much Bigger Problem,” August 18, 2017. For the United Kingdom, see Robert Booth, “Police Face Calls to End Use of Facial Recognition Software,” Guardian, July 30, 2019.
Algorithmic systems we create are supposed to help us make better decisions, anticipate our needs, and enhance our lives, but this result seems unlikely when the systems are built on a foundation of flawed assumptions that we are unable to scrutinize.

bizarre.” These are not subtle examples. There are photos of US President Barack Obama (“anti-semite”), a seemingly random man (“good person”), a seemingly random woman sunning on the beach (“kleptomaniac”), and the actress Sigourney Weaver (“hermaphrodite”). The authors even made the ImageNet database available to the general public to see for themselves how labeling works. Before the site went offline, I uploaded my simple EDUCAUSE headshot and was shocked by the labels assigned to it: *baron, big businessman, business leader, king, magnate,* and *mogul.* Hearing me gasp, my spouse looked over my shoulder to see what had offended me so audibly, and we couldn’t resist uploading her very similar headshot to see what outrageous epithets were given to hers. While my labels were mystifying and detailed, her one label was mystifying and brief: *sister.*

When I loaded in the headshot of a female president of a higher education presidential association, she was neither queen nor baroness, and her label was also just one word: *sociologist.*

Imagining that labels like these could be involved in determining who gets a loan, who is fit to babysit, or who might be a terrorist is deeply concerning. This important work provides non-AI experts with a view into the practical dimension of bias in artificial intelligence while also underscoring the societal and human dimension of the misrepresentation of images. After all, the authors point out, “Struggles for justice have always been, in part, struggles over the meaning of images and representations.” Algorithmic systems we create are supposed to help us make better decisions, anticipate our needs, and enhance our lives, but this result seems unlikely when the systems are built on a foundation of flawed assumptions that we are unable to scrutinize.

Meanwhile newer, equally problematic technologies continue to proliferate today, especially in the area of human resources and interviewing. For someone with numerous candidates to choose from, the desire to use algorithms to shorten the list


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is understandable, but for the candidates, interviewing is hard enough without knowing that an algorithm is silently judging and interpreting their every move. In HireVue, for example, after candidates record their answers within the video platform, the algorithm analyzes the number of prepositions used and whether or not the candidate smiled. Chief Technology Officer Loren Larsen says the tool can examine “around 25,000 different data points per video, breaking down your words, your voice, and your face.”\(^9\) Why? Are those who smile a lot or use gestures a lot considered to be better hires than those who do not?\(^9\) In any case, these data points are clear invitations for opinions and potential bias embedded in code.

More critically, AI decisions could also be involved in life-or-death circumstances. Consider the famous “trolley problem,” a hypothetical scenario in which a runaway trolley is heading toward a group of people. If you’re in control of the trolley, should you pull the switch to redirect the trolley so that it kills only one person instead? Which choice is more ethical? Today the problem is no longer hypothetical: autonomous vehicle software is being designed to make exactly these kinds of decisions in milliseconds. What happens if someone pulls out in front of a self-driving car? A decision will be made—and it will be made too quickly for the human in the car to discuss, object, or appeal. A 2018 study revealed that ethical perspectives on how an autonomous vehicle should behave in trolley-like problems vary by culture; as a result, some cars will make decisions based on ethical principles that could contradict those of their drivers. According to a February 2020 article, only one country has taken a position on how self-driving cars should behave. In its official guidelines, Germany states: “In the event of unavoidable accident situations, any distinction based on personal features (age, gender, physical or mental constitution) is strictly prohibited. It is also prohibited to offset victims against one another. General programming to reduce the number of personal injuries may be justifiable.”\(^9\)

Digital Ethics Closer to Home

According to HolonIQ, a global education market intelligence firm, artificial intelligence has produced an “explosion” in innovation and investment in education, with an estimated doubling in the growth of the global education technology market by 2025. Clearly, AI applications and the ethical pitfalls some of them bring will increasingly demand attention. However, there are also powerful ethical implications for other, non-AI technologies being actively piloted and deployed in higher education. One example is the constellation of innovations around augmented/virtual/mixed reality. Emory Craig and Maya Georgieva have effectively
mapped out the degree to which immersive technologies invite various ethical challenges, what the authors see as a number of unsettling questions related to immersive experiences. Craig and Georgieva point to a wave of ethical concerns: student data, privacy, and consent; harassment; and accessibility issues.44

Considering the ethical issues more generally, EDUCAUSE has issued a call for caution. In 2019, the EDUCAUSE Top 10 IT issues focused on the data and analytics that are at the heart of the predictive technologies and AI applications entering the edtech marketplace. In fact, half of the items in the 2019 Top 10 list were data-related. Information Security Strategy was #1 on the list, with Privacy appearing for the first time on the list, at #3. This reflected a growing realization highlighted several years earlier by the New America Foundation’s 2016 report “The Promise and Perils of Predictive Analytics in Higher Education,” which recounted the troubling story of a university that planned to use data from a student survey to urge at-risk students to drop out.43

This year, the 2020 Top 10 IT Issues list continues to call out Information Security Strategy (again #1) and Privacy (moving up to #2), but it also returns to the importance of data in other areas, including Digital Integrations (#4). The report authors squarely bring together data, artificial intelligence, and ethics: “Sustainability also has a new dimension. Data is often described as a new currency, meaning that higher education now has two currencies to manage: money and data. Data storage may be cheap, but little else is inexpensive in the process of managing and securing data and using AI and analytics to ethically support students and institutional operations.”43

In a separate statement in 2019, one with the intentionally provocative title “Analytics Can Save Higher Education—Really,” the Association for Institutional Research (AIR), EDUCAUSE, and the National Association of College and University Business Officers (NACUBO) noted that campus analytics efforts have stalled in spite of all the talk. Beneath the hyperbolic title, the analytics statement was unmistakably clear about the importance of attending to digital ethics. We argued that it’s time to “Go Big” with analytics in order to achieve institutional goals, but we also insisted that we need to go carefully. One section—“Analytics Has Real Impact on Real People”—elaborated that “responsible use of data is a non-negotiable priority.”

AIR followed up the statement with its own “Statement of Ethical Principles”; the EDUCAUSE 2019 Annual Conference featured several sessions on ethics; and NACUBO put “Ethics at the Core” on the cover of its Business Officer magazine, which included suggestions for pushing the vendor community for more transparency. All three associations will continue the discussion throughout 2020.44

This focus is welcome, because in the last six months of 2019, a flurry of articles in the mainstream and higher education press observed that higher education had its own potential

39. What does this mean for introverts, who may not smile or gesture as much? At the EDUCAUSE 2016 Annual Conference, Susan Cain urged attendees to celebrate introvert working and leadership styles and avoid bias in privileging extrovert styles. See Roger Riddell, “Wednesday at EDUCAUSE 2016: Power of Introverts, Top IT Issues,” Education Dive, October 26, 2016.
“creepy line” problem. In fact, much of the news coverage is skeptical or deeply critical. For example, the Chronicle of Higher Education “Students Under Surveillance?” article answered its own question with the subtitle “Data-Tracking Enters a Provocative New Phase.” A Forbes end-of-the-year prediction article on higher education bluntly concluded that “campus tech will get even more creepy.” Meanwhile the Washington Post published an article titled “Colleges Are Turning Students’ Phones into Surveillance Machines, Tracking the Locations of Hundreds of Thousands.”

A couple of months earlier, the Washington Post had reviewed records from a range of public and private colleges and universities and reported that at least 44 were contracting with outside consulting companies to gather and analyze data on prospective students, “tracking their Web activity or formulating predictive scores to measure each student’s likelihood of enrolling.” The article asserted that “the vast majority of universities” don’t inform students that they are collecting students’ information. The authors stated that when they reviewed online the privacy policies of the 33 institutions they found using web-tracking software, only 3 disclosed the purpose of the tracking. The other 30 omitted any explanation or did not explain the full extent or purpose of their tracking. The article also claimed that “many” institutions don’t give students the ability to opt out of data gathering. A clear example of how these stories can take a harsh turn is the New York Times Magazine’s critique of college admissions offices’ use of predictive modeling. Paul Tough declared that the modeling is used not to advance diversity and excellence but, instead, is driven by the “thirst for tuition revenue.” Specifically targeting elite institutions, Tough asserted: “Colleges’ predictive models and the specific nature of their inputs may differ somewhat from one institution to another, but the output is always the same: Admit more rich kids.”

In short, the headlines have not been supportive, and articles about the effective and appropriate use of predictive modeling are simply not that intriguing to the mainstream press.

EDUCAUSE findings from our 2019 student survey reinforce a clear concern when it comes to students and faculty (see figure 2). The majority of students (70%) agree that they have confidence their college or university is safeguarding their personal data, yet less than half (45%) agree that they benefit from the collection and use of personal data. Even fewer (44%) agree that they understand how their college or university uses the personal data collected.

Meanwhile, the findings from the EDUCAUSE 2019 faculty survey show marked drops in faculty members’ confidence in...
their institution’s ability to safeguard student/faculty/research data and in their own understanding of relevant policies. 47

**Regulation and Resistance in the Wild West**

The current situation is, to say the least, dynamic. For all the proliferation of new products there is a wide variety of strong voices and forces working to respond to digital ethics concerns. In many ways, the current situation feels a bit like the wild west, both in terms of the rush to be first-to-market with edtech products and in terms of the relatively uneven approach to regulation and legislation. Still, regulation and legislation are happening all over, spurred on by a chorus of demands from world leaders, influential billionaires, activist groups, and celebrities, along with the majority of a skeptical general population. Strangely, some technology companies have joined the choir as well, with CEOs of major firms calling for regulation. Naturally, some people are more cynical about these calls for regulation by those who would be regulated and see them either as a strategy to slow competitors or as an effort to take some control and limit the scope of inevitable regulations. 48

Meanwhile, Europe continues to work aggressively to further privacy, while also advancing the technologies involved. At the same time that it is increasing funding for artificial intelligence by 70 percent and supporting an “AI-on-demand platform” to bring together a community around AI development, the European Union is clear that it intends to deal with digital ethics around artificial intelligence and ensure a sound legal and ethical framework. For example, the European Commission’s document “Ethics Guidelines for Trustworthy Artificial Intelligence (AI)” stresses that artificial intelligence must work “in the service of humanity and the public good,” with an emphasis on trustworthiness. The key requirements, which read like chapter titles in a book about digital ethics, include “transparency,” “diversity, non-discrimination and fairness,” and “accountability.” 49

A separate report on liability certainly suggests a path for continued regulation across the countries of the European Union, and in January 2020, the European Commission announced that it is contemplating a ban on facial recognition in public areas for three to five years. Brexit aside, the United Kingdom joins the European call for regulations, as is evident from the publication of new recommendations for holding AI companies accountable, including both more scrutiny and a proposed new regulating body for “online harms.” In fact, things could get personal in the United Kingdom, with a 2019 government position paper suggesting that the executives of technology companies should face “substantial fines and criminal penalties” for damaging and unlawful activities. 50

While the European Union leads the charge on regulation of artificial intelligence and use of data and algorithms, the United States lags—or at least lacks unified national action. With little clarity on accountability at the federal level, some individual states are taking bolder actions. For example, a growing number of states have enacted some form of legislation related to autonomous vehicles. Many new laws are first laws of their kind, like a January 2020 Illinois law that requires employers to explain to job applicants how artificial

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intelligence will be used and get their consent. In California, several cities have banned facial recognition, while the state has passed laws prohibiting political and pornographic deepfakes and also passed the B.O.T. Act (Bolstering Online Transparency Act), making it unlawful for certain bots to pass themselves off as humans to sell products or influence voters. In another “first-ever,” California passed the California Consumer Privacy Act (CCPA), which is considered comprehensive but whose impact is not yet fully clear.51

Individual state regulations are no substitute for federal laws, and the inconsistencies from state to state contribute to the “wild west” state of affairs, with different sheriffs in different states drawing different lines in different sands. Meanwhile, federal action may happen in 2020, as there are several bills before Congress, tracked online by the Center for Data Innovation’s AI Legislation Tracker. The Algorithmic Accountability Act of 2019 has received a great deal of attention, as it adds federal AI oversight for artificial intelligence and data privacy, according to the National Law Review, which compares this proposed legislation to GDPR. In certain cases, large companies would be forced to audit for bias and discrimination and to fix any problems identified.

As an article in the MIT Technology Review summarized: “Only a few legislators really know what they’re talking about, but it’s a start.”52 There is something of a hype cycle at work for legislation as well as for technology, with flurries of legislative activity closely following flurries of shocking headlines. Practically speaking, the first wave of legislative action and rulemaking may amount simply to raising awareness or influencing the later debate when larger legislative momentum builds. Writing for Bloomberg Law, Jaclyn Diaz concludes that employers and tech companies need not worry too much about new bills in the near future because legislators’ focus is on trying to understand the impact of artificial intelligence.53

Ultimately, ad hoc efforts are underway throughout the world at the city, state/province, and national levels, but they are exceedingly inconsistent, and these kinds of efforts will always lag behind dynamic technology developments. At the global level, rather than a gathering consensus pointing to unified action around ethics and artificial intelligence, we are seeing signs of a “global split,” with Europe and Japan moving in different directions from the United States and China. Nonetheless, there is growing recognition that the best regulatory approach would be global—and that this is also the most difficult to achieve. Yoshua Bengio, a Turing Award winner and Montréal Declaration advocate, argues that without a mandatory global approach, companies will not willingly give up a competitive advantage in order to be more ethical.54

Regulation and legislation are producing, and will continue to produce, noticeable changes, but other voices are important and unprecedented, such as technology company employees who are taking an increasingly activist role in responding to ethical concerns. There have been walk-outs by employees to protest company actions, along with high-profile cases like that of Google’s Meredith Whittaker, who inspired worker unrest across technology companies and, after leaving Google, co-founded (with Kate Crawford) the AI Now Institute, which is focused on the social and

ethical implications of artificial intelligence. These kinds of actions produced results. For example, after conversations with its employees, Salesforce established an Office of Ethical and Humane Use of Technology and hired a chief ethical and humane use officer to create guidelines and evaluate the ethical use of technology. Not all the responses were positive, however. Google established an advisory board to deal with the company’s challenges related to facial recognition and fairness in AI/machine learning and to advance diverse perspectives in general. Within a week after it was launched, Google’s ethics board fell apart, in a very public way, over controversy among appointees. This result contributed to a larger conversation about whether ethics boards are likely to make a difference.

As the world grapples with digital ethics, mainstream entertainment has popularized many of the key themes involved. After all, while most of us could possibly name a book or two related to digital ethics, we could rattle off a much longer list of mainstream films that dramatize the consequences of ethical lapses linked to technology. The 1931 film version of Frankenstein has faded from memory, but in its place are many blockbuster films and television series like Minority Report, Jurassic Park, Ex Machina, Star Trek, and Westworld. These examples and many others have addressed the topic of digital ethics in compelling, approachable ways.

Minority Report (2002) was particularly prescient, including a famous mall scene that is often pointed to as a glimpse of the future. The screens that bombard Tom Cruise’s character with personalized messages and invitations to buy products have been highlighted as an example of sophisticated new technologies to come (never mind that the film is actually a damning critique of this kind of surveillance capitalism). Cruise’s character walks briskly through the mall because he is being surveilled, tracked, and stalked by authorities—drawing comparisons to China’s explosive proliferation and use of surveillance cameras (from 70 million now to 140 million planned) or Russia’s use of facial recognition to enforce COVID-19 quarantines. What’s more, Minority Report is about “pre-crime” technologies that identify crimes and criminals before they happen, which directly points to contemporary efforts to use artificial intelligence to predict crime. China’s use of these technologies has been in the headlines most recently, but the United States and Italy have employed similar technologies for many years.

The influence of creative expressions, especially in the form of films seen by tens of millions, cannot be underestimated. It’s no surprise that some colleges and universities are using science fiction to teach ethics to computer scientists. Forward-looking academic centers like Arizona State University’s Center for Science and the Imagination are making intentional contributions in this way as well.

**Leading the Way**

I’m constantly amazed and inspired by how often the people who make up our higher education community are focused on making a difference. Part of what sustains our community is, simply put, the good that colleges and universities do. The growth of higher education and increased access to education have strengthened democracy, raised wages, reduced poverty, contributed to local economies, boosted national economies, improved lives with research, and generally benefited society overall. In short, given that higher education has led the way in all these kinds of social changes, it is perfectly natural to look to higher education as our best hope for taking on the challenges related to digital ethics. Legislative action and regulation can punish and reward behaviors, but changing

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With its glacier-like speed, higher education has never been known for agility. But for lasting change, it’s hard to argue with a glacier when it has found its path.

Higher Education in the Age of Artificial Intelligence (2017), where he acknowledges that artificial intelligence is going to produce dramatic and even uncomfortable change. His response is to suggest college/university curriculum changes that will prepare the next generation of students to thrive in a world where artificial intelligence and robotics are altering the very definition of workforce. An ethicist would warm to Auon’s plan to make students robot-proof because it is grounded in the humanities—in fact, he argues for a discipline called “humanics.” Auon writes: “Machines will help us explore the universe, but human beings will face the consequences of discovery. Human beings will still read books penned by human authors and be moved by songs and artworks born of human imagination. Human beings will still undertake ethical acts of selflessness or courage and choose to act for the betterment of our world and our species.” In his vision of the new university in the age of artificial intelligence and robotics, he carves out a central role for human agency—not in opposition to, but along with, technological change.

Southern New Hampshire University takes yet another ethical perspective when it comes to using emerging technologies. SNHU’s Global Education Movement (GEM) is working to provide access to fully accredited SNHU degrees to refugees in camps and urban areas across five countries in Africa and the Middle East. It’s difficult to imagine a more ethically inspired initiative than...
this one, which puts a university education within reach for a population with an otherwise 3 percent rate of access. Central to being able to make this kind of global change is finding ways to reduce the cost of offering degrees. To do so, GEM leaders are exploring using artificial intelligence, working alongside a human evaluator, to make their effort more sustainable.

**Policies and Frameworks**

I am not alone in looking to higher education to take responsibility for reimagining digital ethics. Headlines in higher education media—such as “Can Higher Education Make Silicon Valley More Ethical?” or “Colleges Must Play a Role in Bridging Ethics and Technology” or “Will Higher Ed Keep AI in Check?”—call on academia as well. According to the University of Oxford Centre for the Governance of AI, there is mixed support for the growth of artificial intelligence, and there is a decided lack of trust all around. Nonetheless, the highest level of public trust lies with campus researchers.  

One way that higher education is rising to this challenge is through the development of policies and frameworks to advance the cause. EDUCAUSE Core Data Service data between 2017 and 2018 shows a marked increase (from 70% to 76%) in US institutions acknowledging that they have developed and maintain policies and practices to safeguard student success analytics data, including specifications for access privileges and “ethics of data use.”

Key to policy development is having someone on staff to focus on ethical considerations such as privacy on campus. One indicator of growing leadership is the rise of the chief privacy officer (CPO), a relatively new position that reflects and advances privacy and ethics as a priority concern. The Higher Education Information Security Council (HEISC) has published, in partnership with EDUCAUSE, a CPO welcome kit and also a CPO roadmap. The welcome kit makes the challenges of this position clear: “Colleges and universities have multiple privacy obligations: they must promote an ethical and respectful community and workplace, where academic and intellectual freedom thrives; they must balance security needs with civil and individual liberties, opportunities for using big data analytics, and new technologies, all of which directly affect individuals; they must be good stewards of the troves of personal information they hold, some of it highly sensitive; and finally, they also must comply with numerous and sometime overlapping or inconsistent privacy laws.” Since creating and properly resourcing the CPO position is a critical step, it is encouraging to hear

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Celeste Schwartz, information technology vice president and chief digital officer for Montgomery County Community College in Pennsylvania, point out that CPOs are on the rise in higher education. “I think most colleges will have privacy officers in the next five to seven years,” she said, predicting that this will, in fact, be required by law.

Higher education expresses its values through policies, an important vehicle for bringing about change—not necessarily quickly but comprehensively. Depending on how broadly or narrowly “ethics policies” are defined, there may be many dozens at play. Many higher education institutions list hundreds. These vast collections of individual policies are clearly necessary, but the key to leadership on ethics and digital ethics is an overarching institutional policy or statement that connects them all. One example is the University of California’s “Statement of Privacy Values,” which defines privacy from an institutional lens and identifies it as an important value and priority that must be in balance with the other values and commitments of the university. The United Kingdom’s Open University has a “Policy on the Ethical Use of Student Data for Learning Analytics” that provides this kind of broad ethical understanding, along with a section devoted to aligning the use of student data to core university values, underscoring the institution-wide perspective. Some institutions, like Siena College, have specific IT employee policies that address the ethical concerns unique to technology professionals. According to Mark Berman, the former chief information officer for Siena College, all IT staff are required to sign the code of ethics statement on an annual basis, not just when they are hired.

Finally, in addition to the ways that specific colleges and universities use policies and statements to reinforce commitments and expectations, national and international organizations are working to ensure that higher education provides leadership in this area. The Association for Computing Machinery provides a comprehensive code of ethics and professional conduct to all computing professionals, as well as illuminating specific case studies and additional resources. AIR’s “Statement of Ethical Principles,” similarly maps out overarching ethical priorities involved in the use of data “to guide us as we promote the use of data, analytics, information, and evidence to improve higher education.” Organizations are also developing or adopting important frameworks that provide more specific, concrete ethical actions that can be taken. Examples are New America’s five-point framework for ethical predictive analytics in higher education and the international Montréal Declaration for a Responsible Development of Artificial Intelligence, which seeks to develop an ethical framework and open channels for an international dialogue about equitable, inclusive, and ecologically sustainable AI development (nearly 2,000 individuals and more than 100 organizations have signed the declaration).

Policies are one clear way higher education is ensuring that digital ethics concerns remain top of mind, but there are many related ways to accomplish this goal. Kathy Baxter’s article on ethical frameworks, tool kits, principles, and oaths offers numerous examples. To be most effective, these high-level policies or oaths should be supported by concrete efforts as well. For example, DJ Patil, Hilary Mason, and Mike Loukides make a strong case that the use of checklists is a critical way to “connect principle to practice.” They offer a short version of an ethics checklist (see figure 3) and point to a ten-page version as well.

It’s clearly useful for colleges, universities, and the larger community of higher
Figure 3. Checklist for People Working on Data Projects

- Have we listed how this technology can be attacked or abused?
- Have we tested our training data to ensure it is fair and representative?
- Have we studied and understood possible sources of bias in our data?
- Does our team reflect diversity of opinions, backgrounds, and kinds of thought?
- What kind of user consent do we need to collect to use the data?
- Do we have a mechanism for gathering consent from users?
- Have we explained clearly what users are consenting to?
- Do we have a mechanism for redress if people are harmed by the results?
- Can we shut down this software in production if it is behaving badly?
- Have we tested for fairness with respect to different user groups?
- Have we tested for disparate error rates among different user groups?
- Do we test and monitor for model drift to ensure our software remains fair over time?
- Do we have a plan to protect and secure user data?


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If higher education institutions make progress in digital ethics but those building the edtech products don’t share our values, we are unlikely to make more comprehensive progress. EDUCAUSE Core Data Service data from 2019 shows that 74 percent of institutions agree/strongly agree that they “have a procedure for vetting third parties or vendors (e.g., cloud services, connected applications) with respect to data security and privacy.” Though this is a high percentage, it’s worrisome for the one-third of institutions without these procedures in place. Keeping this in mind, EDUCAUSE and our partners are working to find productive ways to urge the supplier community to consider our values and demonstrate their commitment with action. The Higher Education Community Vendor Assessment Toolkit (HECVAT)—developed by the HEISC and members from EDUCAUSE, Internet2, and the Research and Education Networking Information Sharing and Analysis Center (REN-ISAC)—is a useful tool that compiles vetted and standardized prompts to use in procurement processes. While HECVAT was not designed specifically for AI applications and does not yet have a series of prompts overtly focused on digital ethics, both the EDUCAUSE HECVAT Community Group and the EDUCAUSE Chief Privacy Officer Community Group are discussing ways to incorporate privacy-related questions into the HECVAT. Meanwhile, the current version of the tool requires providers not just to identify if they have a data privacy policy but also, if so, to demonstrate whether the policy matches the institution’s ethical principles. In addition, the HECVAT asks vendors and service providers to demonstrate their willingness to comply with policies related to user privacy and data protection.

Embedded Ethics
Policies and other commitments are important ways to spur and mark progress in societal momentum around digital ethics, but the specific efforts of individual institutions also represent important and concrete progress. Early in 2018 the New York Times reported on institutions like Cornell, Harvard, MIT, Stanford, and the University of Texas at Austin—all of which were developing and, in varying degrees, requiring ethics courses for students. In fact, in order to be accredited by the Accreditation Board for Engineering and Technology (ABET), computer science programs must ensure that students understand ethical issues related to computing. Harvard’s nationally recognized model seeks to imbue students with ethical thinking. According to Barbara Grosz, a professor of natural sciences at Harvard, stand-alone courses are part of the solution, but she notes that this approach could signal the wrong message that ethics is more a capstone that is completed after the “real work” is completed. Harvard is widely sharing the model in the hopes that this approach will catch fire because the university envisions a culture shift that will lead to “a new generation of ethically minded computer science practitioners” and that will inspire “better-informed policymakers and new corporate models of organization that build ethics into all stages of design and corporate leadership.” Bowdoin College is representative of other institutions that are working with faculty to bring about a similar shift: “So instead of just teaching one course in the subject, the aim is to help students develop what we are calling an ‘ethics sensibility,’ so developers will be aware of...
the implications of their work from the outset. We also want to help computer science faculty feel more comfortable teaching this type of content within their technical courses by providing the pedagogical framework and instructional resources to do so.⁶⁶

Academic centers have an important role to play in leading the way. For example, founded in 1986, the Markkula Center for Applied Ethics at Santa Clara University is dedicated to an interdisciplinary approach to digital ethics. While working to ensure that Santa Clara graduates are ethics-minded, the center is uniquely dedicated to sharing free resources with other colleges and universities, including case studies, briefings, videos, and hundreds of articles and other materials on applied ethics across many disciplines and fields. Recently, the center added special resources for “Ethics in Technology Practice,” designed for use in a professional setting, rather than in an academic one. Among the resources that the center offers, without charge, to any other college or university are three complete modules developed by the technology ethicist Shannon Vallor (data ethics, cybersecurity ethics, and software engineering ethics)—modules that have been used by instructors at more than two hundred institutions around the world. The center’s Framework for Ethical Decision Making comes with a smartphone app designed to walk users through a more thoughtful and ethical decision-making process.

Another example of institutional action is the ambitious new MIT Schwarzman College of Computing, which demonstrates a significant early example of higher education reshaping itself to respond to the tectonic changes that artificial intelligence is introducing. MIT’s press release and video accompanying the announcement of this billion-dollar investment describe it as the “most significant structural change to MIT since the early 1950s.” The new college has a strong focus on ethics and a truly interdisciplinary approach. Half of the fifty new faculty positions will be appointed jointly with departments across MIT, seeking to benefit from the insights from other disciplines. Donor Stephen A. Schwarzman—chairman, CEO, and co-founder of Blackstone, a leading global investment firm—summarized the unique contribution higher education can make: “With the ability to bring together the best minds in AI research, development, and ethics, higher education is uniquely situated to be the incubator for solving these challenges in ways the private and public sectors cannot.” MIT President L. Rafael Reif also underscored the ethical focus of the college: “Technological advancements must go hand in hand with the development of ethical guidelines that anticipate the risks of such enormously powerful innovations. This is why we must make sure that the leaders we graduate offer the world not

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⁶⁵. EDUCAUSE, “Higher Education Community Vendor Assessment Toolkit,” November 21, 2019
only technological wizardry but also human wisdom—the cultural, ethical, and historical consciousness to use technology for the common good. Emerging from a period punctuated with dour public statements such as when Elon Musk called artificial intelligence “humanity’s existential threat” and likened its growth to “summoning the demon,” Stanford University launched its own billion-dollar project: the Institute for Human-Centered Artificial Intelligence (HAI), also a deliberately interdisciplinary group that “puts humans and ethics at the center of the booming field of AI.” With value statements heavily focused on integrity, humanity, and interdisciplinarity, the institute, according to its press release, “will become the most recent addition to Stanford’s existing interdisciplinary institutes that harness Stanford’s collaborative culture to solve problems that sit at the boundary of disciplines.”

The interdisciplinary focus of higher education ethics centers reaches its full realization when colleges and universities like California State University–Long Beach develop “Ethics Across the Curriculum” initiatives modeled on the “writing across the curriculum” work of previous decades. Utah Valley University has been engaged in this work for decades, developing best practices for ethics education, such as a student symposium, a faculty summer seminar, fellowships, and more. It is no surprise that the university’s more recent ethics work has had a strong digital ethics focus. Its “Ethics Awareness Week” in 2019, for example, focused on “Ethics, Technology, and Society” and included speakers on surveillance ethics, biomedical ethics, the ethics of digital literacy, artificial intelligence, and academic technology.

Seven Questions about Digital Ethics

1. Is there a community of concern related to digital ethics on your campus? Should you launch one?
2. Does your campus have written policies or guidelines related to privacy and digital ethics? Can you find them?
3. Do you know whose full-time job it is to worry about ethical issues? Have you had lunch with her or him?
4. When someone on campus develops an application that uses student data, is any ethical framework used before work begins? Required?
5. When someone on campus buys an application, is there any ethical review required?
6. Do you know what your campus is doing to ensure that the next generation of developers and technology professionals (our students) have a strong digital ethics mind-set?
7. Are you more informed about digital ethics this year than last? Will you be even more informed next year? How will you make this happen with everything else going on?

Next-Gen Ethics

One reality that cannot be ignored by anyone interested in advancing digital ethics is that change could very well happen only incrementally. Another daunting reality is the simple fact that at about the time we have fully wrapped our minds around the current set of worries, pitfalls, outrages, and solutions, there will be a new set of digital ethics quandaries before us. For example, there is already some initial consideration about the need for a new academic discipline focused on “machine behavior,” based on the idea that “we cannot certify that an AI agent is ethical by looking at its source code, any more than we can certify that humans are good by scanning their brains.” Instead, determining whether or not a given artificial intelligence is ethical may depend on our detailed academic study of behavior, just as with human beings. And at about the time we tackle that, we will be starting to grapple with whether artificial entities should have ethical protections—or at least the ethical protections that are afforded to animals. Northeastern University’s John Basl argues: “In
the case of research on animals and even on human subjects, appropriate protections were established only after serious ethical transgressions came to light (for example, in needless vivisections, the Nazi medical war crimes, and the Tuskegee syphilis study). With AI, we have a chance to do better.”

This time around we have a chance to do better and a moral imperative to do much better. Each of us individually—and higher education collectively—can and must lead the way. In The Age of Surveillance Capitalism, Zuboff draws our attention to the idea that surveillance capitalism has turned human experience, as expressed through data, into a new commodity primed for exploitation and misuse, much like “nature’s once-plentiful meadows and forests before they fell to the market dynamic.” This is a powerful lens through which to appreciate the beauty that is threatened and the consequences of inaction. Ireland was once an island of dense forests, with 80 percent forest cover. With the demand for wood to build navies and to fuel the fires of the industrial revolution, forest cover fell to 1 percent by the end of the 19th century. Through grants and incremental advances, the Irish government hopes to achieve near 20 percent forest cover by 2046.

Creating a sense of wonder and opportunity, the world of technology innovation energizes and inspires us. Our conviction that these innovations on the horizon will change the world for the better is a source of optimism. At the same time, the unrelenting drive to march forward could blind us to the need to pay attention to crucial, though far less shiny, ethical and moral imperatives. If we fail to take our ethical responsibilities seriously at this early stage of creating new digital ecosystems, the consequences will be dramatic and as hard to reverse as a vanished forest. Acting now on our individual college and university campuses can help us avoid the need to remediate later. Acting now can also enable us to continue to stride forward, enjoying the development of innovative new technologies, while we remain confident that we are moving ahead on ethically sound ground.

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Finding the right career match should be easy
Higher Ed Digital Ethics: **Practice versus Awareness**

IT and other campus professionals generally agree that their institutions have policies and practices in place to help safeguard data and ensure its ethical use, even though most institutions are lacking in sufficient privacy-focused human resources. In contrast, students and faculty report low levels of awareness around what data is being collected and, especially, how the data is being used.

**Sources:**
1. EDUCAUSE Core Data Service 2019
2. Amelia Parnell, Darlena Jones, Alexis Wesaw, and D. Christopher Brooks, *Institutions' Use of Data and Analytics for Student Success*, research report (NASPA, AIR, and EDUCAUSE, April 2018)
4. Joseph D. Galanek and Ben Shulman, “Not Sure If They’re Invading My Privacy or Just Really Interested in Me,” Data Bytes (blog), EDUCAUSE Review, December 19, 2019

**IT professionals rank security analytics as No. 7 in the top 10 strategic technologies for 2020.**

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**THE DATA | TRENDING NUMBERS**

**Personnel**

- **94%** of student affairs, institutional research, and IT professionals agree or strongly agree that privacy rights are respected in conducting student success studies.²

- **78%** of IT professionals agree or strongly agree that their institution develops and maintains sufficiently robust policies and practices to safeguard data used for student success analytics.³

- **74%** of IT professionals agree or strongly agree that their institution has a procedure for vetting third parties or vendors with respect to data security and privacy.³

- **70%** of students are confident in their institution’s ability to safeguard their data.⁴

- **61%** or more of institutions rate data-informed decision-making and privacy as influential, putting these two trends into the “Most Influential” category.³

- **60%** of faculty understand policies surrounding data use, storage, and protection.⁴

- **58%** of institutions report having no FTE privacy staff.¹

- **45%** of students think they benefit from the collection of their personal data for purposes such as improved services and advising.⁴

- **44%** of students understand how their institution uses their personal data.⁴

- **44%** of faculty understand what personal data their institution collects on them.⁴

- **25%** of institutions report having between 0 and 0.5 FTE privacy staff.¹

- **24%** of faculty understand how their institution is using their personal data.⁴

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**Campus Professionals**

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All Americans deserve a way to translate their full education, training, and work experience to a record of transferable skills that will open the doors to high-wage occupations and careers. The current education-to-workforce ecosystem results in skills being under-matched and/or mismatched for potential employment opportunities. Consider the learning that happens outside the lines of formal, four-year, for-credit education. Continuing education, competency-based education, and career and technical education programs provide a broad range of educational experiences—many happening on a not-for-credit basis—that are difficult to document on a traditional transcript. Having a record that documents these achievements and aligns with employers’ needs will clearly benefit not only community college students but workers and lifelong learners as well.

With a sense of urgency and immediacy, the National Student Clearinghouse is working with the US Department of Commerce’s American Workforce Policy Advisory Board, IBM, Western Governors University (WGU), Central New Mexico Community College (CNM), and IQ4 to address these issues. This group will develop a nationwide pilot to demonstrate an efficient, integrated solution and infrastructure that will empower learners to pursue and manage their education and their career.

Key to this pilot is the interoperable learning record (ILR). An ILR is a verifiable record of a person’s achievements in education or training processes, formal or informal, classroom-based or workplace-based. Serving as compilations of peoples’ traditional and nontraditional learning experiences, ILRs can be interchangeably shared between education providers and businesses. ILRs can provide the exchange of information from school to school, school to business, business to school, and business to business. Ideally, an ILR should be flexible enough to identify when a learner’s skills don’t match those that employers are seeking and how learners might close the gap. An ILR should provide a trusted, validated, privacy-protected pipeline for businesses to find talent based on skills and competency levels. Aside from the technical and skills-based work that is required, part of the road to interoperability is understanding how privacy rules, such as the Family Educational Rights and Privacy Act (FERPA), may need to evolve to ensure that privacy is not trampled in pursuit of an ILR infrastructure.

In September 2019, the American Workforce Policy Advisory Board released a white paper on ILRs, describing the need to translate all education, training, and work experience to a record of transferable skills. To surmount the challenge of a standard platform and language and the definition of education, an ILR requires four characteristics.

1. Understandable and Consumable Content
Over the last several years, the American Association of Collegiate Registrars and Admission Officers (AACRAO) has been involved in defining a comprehensive learner record (CLR). AACRAO has been helping schools understand and embrace the fact that learning is represented by more than the traditional academic transcript. Institutions, employers, policymakers, and others need to understand learning outcomes on a nationwide scale. The CLR content is not easily consumable by industry, and industry-generated content is not easily consumed by education as part of a skills-based continuation of a learner’s journey. Understanding the data standards required by human resource information systems, as well as the definitional standards around skills, is essential in order to enable school-to-business, business-to-business, and business-to-school portability. Part of this challenge is linked to the need for open standards for data and skills taxonomies as part of a solution. Open standards allow for systems that read, compare, and share information inside a credential.

2. Reliable Data
Tomorrow’s learning transcript needs to capture learning wherever and whenever it happens. Today, recognition is being provided in increments and artifacts, such as badges, awarded for those outcomes. Learners will need a universal, interoperable credential wallet to compile their record of reliable, understandable data. The credential wallet will hold artifacts that have been earned and are available in one, verifiable place. Recently, the Clearinghouse launched Myhub as a universal, credential wallet, and institutions such as Johns Hopkins University and Western Colorado University are utilizing it. But these days an individual’s learning is extending well beyond their traditional higher education. Additional types of data will need to be verifiable and interoperable with other learning records in a single container (wallet).

3. Controllable Data
The data needs to be controllable by both the issuer and the learner. The issuer of a digital artifact must be able to modify or resend an artifact. The learners, who have a right to that artifact,
must be able to share their record with anyone they choose. This self-sovereignty of the learner to manage the utilization of an artifact is a significant key; however, the genuineness of the artifact is always in control of the issuer. Furthermore, errors of omission on the part of the learner when a complete record is required need to be addressed in discussions about self-sovereignty.

4. Adoption at Scale
It is going to take time to adopt an ILR process, and that adoption will require multiple technologies. Only a small fraction of the more than 164 million workers in the United States currently have artifacts on an ILR platform, according to the Federal Reserve Bank of St. Louis. A universal approach will be required for adoption, which will be based on how both education data and workforce data come together within the context of a privacy framework.

A Cybersecurity Pilot
A nationwide pilot is underway to demonstrate how issuers can align skills-based learning outcomes to cybersecurity credentials and cybersecurity jobs. This pilot will focus on leveraging several areas: the National Institute of Standards existing cybersecurity skills taxonomies that are tied to open standards and course-based, skills-based learning outcomes at WGU and CNM; the cybersecurity pilots in the New York City area through iQ4 (creator of the pathway and pipeline engines); the universal, credential wallet created by the Clearinghouse (Myhub); and the IBM learning credential network blockchain. The pilot will showcase how skills taxonomy interoperability can be demonstrated, how a universal wallet can be used by the learner to aggregate and curate these skills and learning outcomes, and finally how a compass (pathway and pipeline functionality) can be used by learners, employers, and educators—through analytics—to find and assess qualified cybersecurity candidates; determine gaps in skills and curriculum for learners, academic institutions, and employees; and facilitate career paths into the cybersecurity field.

Governance and standards of the interactions between job seekers, learning providers, and employers are the interoperability lynchpins that will be front and center during these efforts. The pilot’s goal is to identify the components, stakeholders, and patterns required for replicability across a range of careers and industries. The development of the pilot will be led by IBM in collaboration with WGU, CNM, the Clearinghouse, and iQ4. The Clearinghouse will also provide data sets and will integrate the prototype with its Myhub offering. Myhub will be enhanced to include institutional skills-based pathway engines along with industry-facing, skills-based pipeline engines. Interoperability will be demonstrated by WGU and potentially several other education entities, as well as an integration into applicant tracking and human resource information systems.

The Clearinghouse’s Role
The Clearinghouse is relying on its long history as a trusted, private, and secure entity for a learner’s educational and associated artifacts. The Clearinghouse’s goal is to provide a one-stop shop that benefits learners, education institutions, and employers. The Clearinghouse’s work in the industry credential areas is expanding its data collection beyond traditional education to the benefit of learners, schools, and workforce-certification entities.

As community colleges across the nation have known for quite some time, the comprehensive definition of education must include all forms of learning as a growing expectation of how education will support the workforce of the United States. Throughout higher education, there is clear recognition of the imperative to help learners and alumni represent themselves in the best and most complete manner. This gives learners unprecedented ability to succeed on their journey. Colleges and universities across the country are seeking a cost-effective service that puts their learners on an equal playing field with their credentials and artifacts. Additionally, numerous institutions are curious about blockchain and how this technology is going to mature. As pilots and other projects proceed, the Clearinghouse will be involved in multiple conversations with those in industry, education, and government to discern how it can perform a nationwide service while always protecting student data.

Next Steps
The single biggest struggle that companies, large and small, have today is finding the right person with the right skills at the right time. A national ILR infrastructure will allow learners to match their skills and their attainment to roles and positions they are pursuing. Simultaneously, it will allow employers to better understand the skills they require and develop a new view of recruiting and managing talent. To achieve this vision, higher education will need to reimagine how it documents the achievements of traditional and nontraditional learners.

According to the Clearinghouse Research Center, the number of Americans who went to college and did not complete any type of credential grew from 29 million in December 2013 to 36 million five years later. ‘There is an opportunity to bring these learners back into the education continuum. IBM, WGU, CNM, the Clearinghouse, and iQ4 have a collective goal to create, develop, and deploy this work as an extensible national utility enabling everyone to take advantage of its capabilities. We look forward to working with employers, credential issuers, and higher education institutions on a national ILR to empower learners to pursue and manage their education and their career across their discipline of choice. ■

Note

Ricardo Torres (rtorres@studentclearinghouse.org) is President and CEO of the National Student Clearinghouse.

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The Earth Science Information Partners, the community steward for global Earth and environmental science data professionals, is partnering to transform scholarly communication and make data publicly accessible.

**Judy Ruttenberg** described how libraries and data organizations are partnering to transform scholarly communication and make data publicly accessible in “From Transactional to Transformational: Research Libraries and Data Partnerships.” The Earth Science Information Partners (ESIP) is one example of a data organization that has been supporting this work. ESIP is the community steward for global Earth and environmental science data professionals. For more than twenty years, ESIP has driven its mission to support the networking and data dissemination needs of its members and the global Earth science data community, by linking the functional sectors of observation, research, application, education, and use of Earth science.

While ESIP is focused on Earth and environmental science data, it is also an early adopter and advocate of data management and stewardship best practices including the implementation of data-management plans and the creation of data-citation guidelines. Recently, ESIP turned its attention to the gap that Earth and environmental science researchers are facing around data-stewardship skills. ESIP has worked with general data communities and academic societies like the American Geophysical Union (AGU) to provide additional domain-tailored training at society meetings. As a first step, ESIP and the American Geoscience Institute (a federation of societies and related organizations) developed Career Compass for Data Sciences—outlining skills that students need for geoscience careers. ESIP is also supporting the skills gap in three additional ways.

1. **Data Management Training Clearinghouse.** The Data Management Training (DMT) Clearinghouse (http://dmtclearinghouse.esipfed.org/) is a registry for online learning resources for research data management. It was created as a collaboration between the US Geological Survey’s Community for Data Integration, ESIP, and DataONE. The Clearinghouse was established to help researchers overcome the challenge of finding disparate training material. While originally developed for the Earth and environmental science communities, the Clearinghouse is being expanded to support additional domains through an Institute of Museum and Library Services (IMLS) national leadership grant to the University of New Mexico.

2. **Data FAIRs at Society Meetings.** Over the last five years ESIP, AGU, and more recently the National Science Foundation’s EarthCube Office, in addition to the broader data professional community, have partnered at society meetings such as the AGU Fall Meeting to support the Data FAIR (https://copdess.org/data-fairs/). The Data FAIR provides researchers with opportunities to engage with data professionals and informatics experts familiar with their scientific domain and to learn about the skills and techniques that will help further their research and make their data and software open and FAIR. Data FAIR
activities include town halls, workshops, demos, and a data help desk staffed with experts from the Earth and ocean science informatics community. The help desk is a way to explain disparate concepts around data-citation and data-management plans that aim to narrow the gap between making data FAIR and scientists’ ability to execute good data management practices in their own workflows. The ESIP community will continue to push data citation forward and is currently exploring other types of research objects, in addition to data and software, that can further extend the value of research if cited properly.

3. Force 11 Scholarly Communication Institute New Emphasis on Geosciences. The Force11 Scholarly Communication Institute (https://www.force11.org/fsci/2020) is a UCLA summer program that helps people learn how to navigate this new world of scholarly communication. FSCI instructors include leading practitioners from the world of libraries, publishing, and research and research administration. ESIP’s newest approach to reaching scientific researchers is in partnering with FSCI to create a virtual short course that applies hands-on Earth and environmental science examples. On the first day, participants will focus on an analysis example to create a data product, and on the second day, they will develop a mock paper to practice managing and citing their data.

Each of these examples is generalizable to research domains outside of Earth and environmental science. Ultimately, as the scholarly community accelerates public access to data, partnerships with researchers will allow us to truly put the data to work and see the transformational scientific discovery and innovation that can be made through robust data-sharing practices.

Note

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Artificial Intelligence: Threat or Opportunity?

The last few years have been rough for higher education. According to a 2018 Gallup Poll that tracked Americans’ confidence in colleges and universities, over the previous five years higher education saw its sharpest decline in public trust, with only 48 percent of those surveyed expressing confidence, down from 57 percent in 2015.¹

But statistics like these can be overstated. Americans distrust many traditional institutions these days: not only higher education but also government and the media. That distrust extends to big technology companies such as Facebook and Google. According to the Edelman Trust Barometer 2020, which tracks consumer sentiment across a range of sectors, Americans distrust—or are at least ambivalent about—the development of advanced technologies such as artificial intelligence (AI) by companies that may not be positively and responsibly shaping our future.²

Think about the fallout from Facebook’s Cambridge Analytica debacle, in which millions of users’ profiles were harvested without consent and used for political advertising. And consider Uber’s Advanced Technologies Group, which had no official safety plans in place when one of its self-driving test cars crashed and killed a woman. These examples are frightening because they appear to be void of responsible leadership acting in the public’s collective best interests. They leave us not knowing who we can trust in a brave new world. There is, however, one exception—according to a 2019 survey from the University of Oxford’s Future of Humanity Institute (FHI), which asked 2,000 Americans to rate their confidence in actors developing artificial intelligence. Half of Americans surveyed said they trusted higher education (and the military) above all (more than government agencies, non-profit research collaboratives, and big technology companies) to build, manage, and govern artificial intelligence.³

We should lean into this finding. It not only signifies at least a pocket of trust remaining in higher education institutions but also offers an opportunity for college/university researchers, faculty, staff, and administrators to regain lost ground and exemplify AI leadership at a time when our institutions—and our world—need us most.

Leadership is increasingly digital in focus and present in just about every sector today. Generally, digital leadership describes an emerging class of roles, responsibilities, and competencies needed to lead organizations in a digital world. But we should not confuse digital leaders with digital evangelists, at least not in higher education.

Digital leaders are equipped to lead in a digital world. They understand its complexity and also the dissonance and distrust that digital can create, and they help others make meaning within and out of...
it. Good digital leaders are virtuous and altruistic. According to Deborah Ancona, who studies digital leadership at the MIT Sloan School of Management, digital leaders are sense-makers who help others “create meaning out of the messy world.” Their lens is digital, but their focus is human.

We need more digital leaders in higher education who are sense-makers not only for their own institutions but for the public at large. We need leaders who are optimistic about this technology but also cautions. We need leaders who are engaged in the world of artificial intelligence—whether as researchers, subject-matter experts, educators, ethicists, or administrators in our communities and the world at large—and who are committed to building transparency and trust within the AI world.

This is something technology companies struggle to do, but it’s in the DNA of higher education. Think of digital leadership as a strategy of engagement, taking the understanding of, resources for, and experiences with artificial intelligence cultivated within colleges and universities—whether through basic research, experimentation, teaching, or academic innovation—out into the world to meet its most pressing challenges. Doing so not only will quell fears but also may instill—perhaps even increase—confidence in higher education at a time when we need it most.

As artificial intelligence continues to move further into the mainstream (which it will) and as regulators struggle to govern AI research and development (which they will) and as the market continues to coalesce around big-tech companies such as Facebook and Google (which it will), higher education is uniquely poised to gain public trust once again.

Notes

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The CIO+

Throughout a career, it is common to ask oneself: “What’s next?” In many occupations, a career progression is clear, even if it is highly competitive—take, for example, the path of academic leaders who progress from faculty to chair, dean to provost, and finally (perhaps) on to president. But what’s next for a CIO? There isn’t always a straight line to the CIO job, and what lies beyond can be just as uncertain.

In the past, CIOs who wanted to progress had to change jobs, switch industries, or begin consulting. But as technology has grown to play a critical role in the operations of higher education, and as the CIO role has advanced within the institutional hierarchy, opportunities are opening up for CIOs to be utility players, jumping in to address leadership needs throughout a college or university. Enter the “CIO+”—a new kind of executive who blends the versatility and resilience demanded by the continuously changing landscape of information technology with the business savvy and entrepreneurial mindset required to help higher education institutions thrive under today’s intense pressures.

As the CIO role has grown from technical management to include innovation and change leadership, some CIOs are now uniquely positioned to move into new functions across the institution. Necessarily, CIOs have uniquely broad insight into campus-wide operations—developed through work with diverse colleagues to translate business issues into technical solutions. CIOs have learned to take time and deeply understand the ins-and-outs of almost any business unit, traveling readily from student services to academic affairs to administrative operations—and so many places in between.

For decades, CIOs have led their organizations through tremendous change and disruption—from the advent of mobile computing and the rise of cloud technology to the introduction of HIPAA and PCI regulatory compliance. Along the way, the scope of IT organizations has continually evolved to include functions like project management, information security, service management, business continuity—the list goes on. In a sense, the job has always been about doing something today that is different from what was done yesterday. CIOs are adaptable leaders good at planning, logistics, budgeting, and strategy. In a 2018 survey, 60 percent of respondents stated that the main reason for pursuing the CIO role is “to make a difference.” They also noted that the most important skills for a CIO are communication and leadership (see figure 1).

Still, there are many barriers that, without careful thought and positioning, can make taking on additional functions difficult for a CIO.

First, information technology is simply big—the scope is broad, the pace is fast, and the demands are high. With compliance, information security, and IT governance, CIOs who themselves—or whose teams—lack the right blend of talent and organizational maturity will be challenged to handle the context switching and other demands associated with adding responsibilities outside of the IT organization. Additionally, a CIO+ may not make sense for every campus. For example, institutions whose core offerings are primarily digital (e.g., online education) increasingly call on CIOs to take on other significant “front office” technology responsibilities, such as digital product development and product management.

Second, many outside of information technology may be uncomfortable with the idea that a CIO should take on more responsibility beyond the IT organization. Some institutions have made a single executive responsible for the IT department and libraries, but otherwise the status quo dictates where so many other functions report in. And yet, as information technology has evolved over decades (remember when academic computing and administrative computing were separate entities?), and as IT leaders have become CIOs reporting to chief executives, other functions have also experienced major shifts. But organizational structures in those areas often remain unchanged. As a result, the CIO’s peers, executive and board leaders, and others on campus may be biased against the unfamiliar idea of a CIO breaking the mold and taking on more.

This presents a two-part challenge if you are a CIO looking to contribute in new ways. Others on campus will need to witness

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**Figure 1. CIO Perspective: Five Most Important Skills for CIOs**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Percentage</th>
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<tr>
<td>Technical Knowledge</td>
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<td>Higher Education Knowledge</td>
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<td>Interpersonal Skills (effective social interaction)</td>
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<tr>
<td>Leadership</td>
<td>78%</td>
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<tr>
<td>Communication Skills (writing, listening, speaking)</td>
<td>88%</td>
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</tbody>
</table>

your versatility. You must be viewed as having enterprise-level understanding, experience, and expertise. Think about how you can solve enterprise problems for which the solutions may not be technical. Demonstrate that you can deliver results in areas that may surprise those around you, challenging their assumptions. A great way to begin building this type of reputation is to serve on committees and initiatives outside of the traditional IT realm.

As you navigate the road beyond a traditional CIO role, be sure to steer clear of some basic pitfalls. First, don’t move too soon. If we’re in our jobs “to make a difference,” as those survey respondents claimed, then we want to see our major tech-related initiatives succeed. Angling for the next big challenge before you reach those milestones within technology will go one of two ways: either those around you won’t buy that you’ve mastered your own domain, or you may simply get in over your head.

Second, don’t give your colleagues a reason to mistake you as devious or opportunistic. Without their buy-in, you may not make it to the next stop—and even if you do, your chances of success will be compromised. Instead, focus on laying the groundwork for trust in your authentic integrity and ability. If you’re in a “race to the top,” take the high road: employ the careful balance of thoughtfulness and hard work the CIO role has given you.

Finally, think intently and boldly about how to structure your IT organization. This is a long game—and it must be totally aligned with the future success of information technology at your institution. One analyst at Gartner says to “structure IT like a service provider.” This translates into the following steps:

- Build an IT leadership role that mirrors some of the C-level roles in any major enterprise (e.g., CFO, COO, and CTO).
- Create an IT Business Office (the CFO column) that will streamline the many complex commercial and financial matters that the IT organization must handle to be successful and agile.
- Identify or cultivate strong operational leadership within the IT organization (the COO column), giving the organization real-time leadership that provides reliability and response during normal operations and minimizes fallout during a crisis.

As you arrive at your new CIO+ destination, be ready for a few surprises, and consider these lessons we learned along the way.

First, your view of a team through an external lens can be very different from the view you will get from the inside. It is easy to be critical and think you have all the answers until you gain an insider perspective. Then, as you learn more and become a part of the team, you may become protective of the group. Try to maintain objectivity and revisit the external lens as you are evaluating and contemplating change. Both perspectives are valuable—and you may want to rely on a trusted colleague who can provide you with occasional reality checks.

When a new responsibility is added, prepare yourself and those around you so that you can let go of something. This is a great time to provide others with the chance to grow and to identify their own new ways to develop an organization. It is also an excellent time to reorganize and break free from stale IT organizational structures.

Avoid empire-building as a goal, and instead focus on balanced leadership so that you can truly contribute and make a difference. Stay concentrated on the output, performance, and results of each area. If you are approaching a tipping point where you are becoming less effective, be prepared to speak up! Only you really know when enough is enough, and you may find yourself depending on those around you in new ways—not just your team but also your peers, your advisors, and possibly even your boss. Remember too that when you take on something new, others on your team may also be taking on significant additional responsibility. For example, your business office may suddenly have a much larger budget to manage, more purchasing to handle, and/or added HR responsibilities to coordinate. Increase dialogue with and support for your team, or you will risk responding too late to their needs.

Take time to consider and understand why you received this new responsibility. What is it that made you successful? Is the change right for both you and the institution? Be self-critical of the opportunity, and edit where analysis suggests editing is needed. It’s okay to say “no.” If you do say “yes,” build on your success and continue to minimize your weaknesses, but be flexible in acknowledging that what got you here might not be what makes you successful in the future.

Taking into consideration all of the above, remember that nobody knows better than you when the right time is right to take on that next big challenge and become a CIO+. A safe bet, though, is that now is a good time to demonstrate your interest. Talk to those around you to signal that you are excited not just about your current job but about the enterprise more broadly. You might be surprised to learn that your colleagues have trust in your abilities beyond what you’re doing today. One or two of them may even have projects that they would like you to help lead. You won’t know this without having a conversation.

There has never been a better time for technology leaders to shine and to show their C-suite versatility. The possibilities are many, and only you and the people close to you know what unique opportunities are right for you to pursue. Take it slowly, focus on output, cultivate accountability and leadership in the IT organization, and demonstrate your skills along the way. Before long, you may find yourself blazing trails and turning heads in your second career as a CIO+.

Notes

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</tr>
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<td>3</td>
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<td>19</td>
</tr>
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