

# EDUCAUSE

## REVIEW

**Digital Transformation:  
It's Time**

*Diana G. Oblinger*

**Interface University  
and Other Scenarios  
for the AI Economy**

*David Staley*

**The Post-Pandemic  
Evolution of Student  
Data Privacy**

*Merritt Neale and  
Matthew Tryniecki*



## A Grand Strategy for Grand Challenges

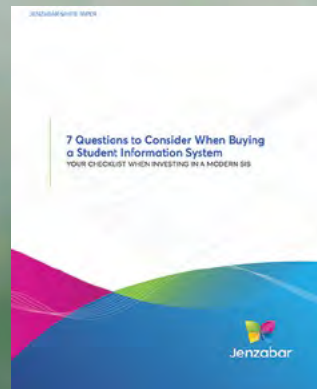
A New Approach through Digital Transformation

*Susan Grajek and D. Christopher Brooks*



# Don't Let A Legacy SIS Be Your Legacy.

A modern student information system will empower your campus to be more flexible, adaptable, and prepared for the future.



Download our white paper to uncover the seven questions you need to ask when looking to modernize your student information system.

[Download Now](#)



# Contents

2020 ISSUE #3 | VOLUME 55, NUMBER 3



FEATURES

# 10

## A Grand Strategy for Grand Challenges: A New Approach through Digital Transformation

*Susan Grajek and D. Christopher Brooks*

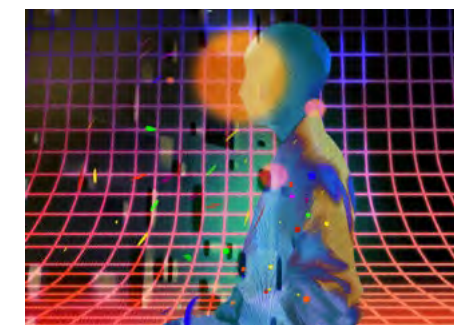
Today's Grand Challenges in higher education need to be met with a new approach: a Grand Strategy that utilizes the cultural, workforce, and technological shifts of digital transformation.



### 24 Digital Transformation: It's Time

*Diana G. Oblinger*

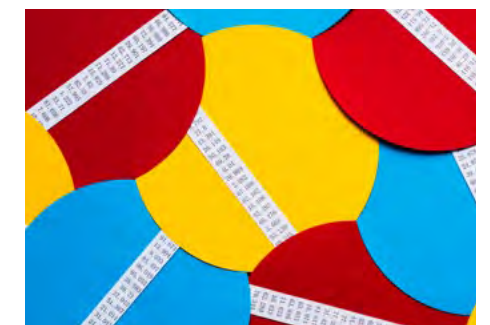
Digital transformation can help higher education meet three unavoidable challenges ahead: mounting financial pressures, changes in the college experience, and ongoing uncertainty. It's time to think differently.



### 40 Interface University and Other Scenarios for the AI Economy

*David Staley*

As artificial intelligence moves us to a world without work, what does that mean for higher education institutions and their mission in the new economy?



### 50 The Post-Pandemic Evolution of Student Data Privacy

*Merritt Neale and Matthew Tryniecki*

The critical importance of maintaining strong data privacy and governance policies and protocols has only increased with the shift toward a remote delivery model in higher education due to the COVID-19 pandemic.



**COLUMNS**

**5 Homepage**

[From the President]

Making Bets for Fall: Two Important Trends  
*John O'Brien*

**8 Leadership**

[Views from the Top]

What Failure Can Teach About Leadership  
*Ajay Nair*

**58 Connections**

[Community College Insights]

From a Roadblock to the Path Forward:  
Improving the FAFSA Process  
*Charlie Javice*

**60 E-Content**

[All Things Digital]

Collections as Platform: Synthesizing  
Content, Computation, and Capacity  
*Darby Orcutt, Hilary Davis, and Greg Raschke*

**62 New Horizons**

[The Technologies Ahead]

Preparing Workers for Anything:  
Human + Machine  
*Allison Dulin Salisbury*

**64 Viewpoints**

[Today's Hot Topics]

IT Service and Superpowers  
*Ron Kraemer*



# Embracing Change Take-It-Anywhere Technology™

**SOCIAL DISTANCING**

**Space-Saving • Experience-Enhancing • Forever-Flexibility**

Promote Safe Distancing And  
**Smart Self-Service Technology Access**  
With *Up to 30 Devices in 5 Feet*



**Mix-N-Match Laptops And Now 110V Portable Power Outlets**

*A New Innovative Approach To Student Battery Access*

For More Info Go To:  
[ChargersAnytime.com](http://ChargersAnytime.com)

**The Perfect Solution To "Short-Term" and/or "Long-Term" Checkouts.**

*New*

Dispense Power Cords, Laptop Bags And Accessories In Addition To The Laptop Itself. Now You Can Accommodate Extended Checkouts too.

LaptopsAnytime™ recognizes when the dust settles that many public spaces, and the services offered, will need to be expanded with cutting-edge solutions. **Self-Service Kiosks** with auto-docking allow you and your facility to maximize overall space and streamline operations, accommodate greater user demand and add hours to your day.

**OVER 3 MILLION**  
ANNUAL CHECKOUTS AND GROWING

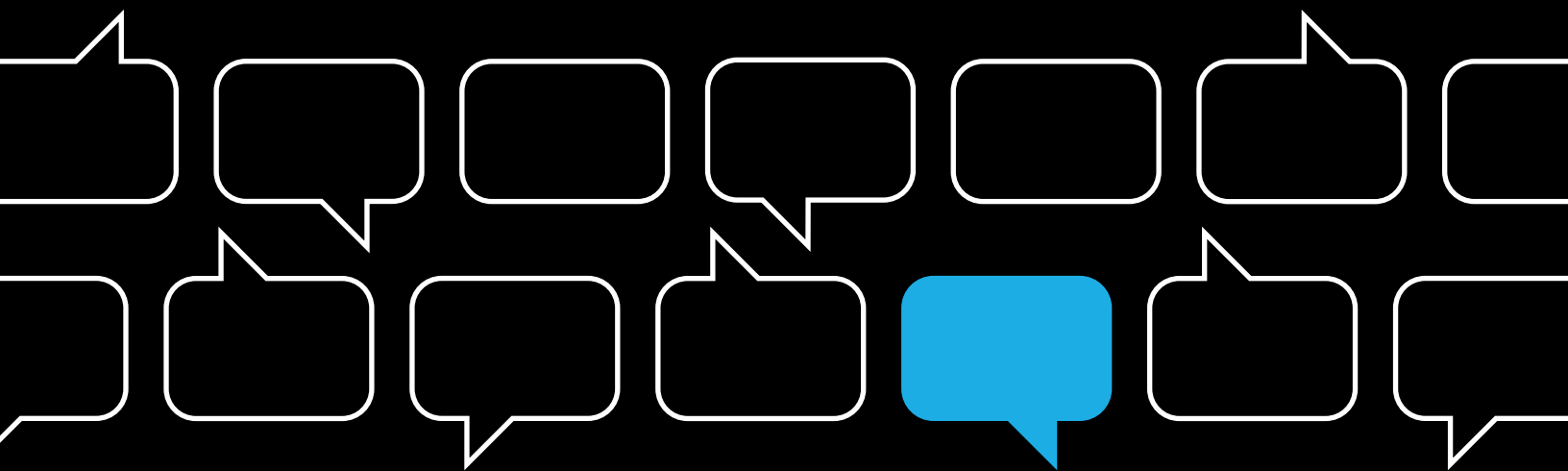
**3,000,000**

Trusted Technology Branded to Your Local Look-n-Feel

**LAPTOPSANYTIME™**  
Automated Checkout Kiosks

1-877-836-3727 • [LaptopsAnytime.com](http://LaptopsAnytime.com)

# Join a whole new higher ed conversation.



campuslabs  CAMPUS MANAGEMENT  IMODULES

Our companies have joined together as Anthology to give you a new voice in higher education. Find out more at [anthologyinc.com](http://anthologyinc.com)



## Making Bets for Fall: Two Important Trends

By John O'Brien

# C

olleges and universities around the world are making their bets for fall, though certainly some will be changing their bets as new facts emerge from the remarkably uncertain landscape of the COVID-19 pandemic. Every week brings a new set of headlines—medical, political, and everything in-between. Ultimately the most consequential decisions—statewide declarations, lockdowns, reopenings, and closings—may well be out of our hands. Making these bets for fall is like having to play a game of poker you'd rather not play with precious resources you'd rather not lose in a game whose rules change without notice.

Amid the unsettling uncertainties, two important trends that started well before fall have accelerated and intensified in the shadow of the pandemic. We should work to ensure these trends continue long after the current crisis has calmed.

### The Accelerating Trend: Digital Transformation

EDUCAUSE has made digital transformation (Dx) a priority, defining the phenomenon to include more than technology. Dx is the combination of technology, workforce, and culture shifts that will transform the institution's operations, strategic directions, and value proposition. In fact, the subtitle for the EDUCAUSE 2020 Top 10 IT Issues article is "The Drive to Digital Transformation Begins."<sup>1</sup> However, progress has been sluggish. As noted in a June 2020 EDUCAUSE report, only 13% of survey respondents said that their institutions are engaged in Dx. The majority of IT professionals said that their institutions are either exploring Dx (38%) or developing a Dx strategy (32%).<sup>2</sup> The pandemic dramatically changed the short-term picture of technology change, but the overnight "ready or not" technology lifeline we experienced in the spring is not necessarily *transformational* just because it was a monumental achievement.

On the other hand, the pandemic response of higher education institutions this fall semester offers a powerful opportunity to accelerate Dx far beyond pre-pandemic levels. Dx requires "integrative CIOs" to play a growing role in the strategic direction of their institutions, and COVID-19 has opened this door: 73% of respondents to a June 2020 EDUCAUSE QuickPoll reported that their CIOs have a seat at the pandemic-response table.<sup>3</sup> Moreover, the workforce and culture elements of true Dx have accelerated as part of the "Zoomification" of everything from happy hours to religious services, setting a new standard as digital-everything becomes the norm. It is impossible to imagine that the majority of institutions will quietly return to only contemplating Dx. We must continue the jump-start and accelerate progress well beyond 2020.

### The Intensifying Trend: Wellness

Long before COVID-19, concern about the unique and growing needs of students with behavioral or mental health challenges has been growing. COVID-19 and its financial impacts have added never-before-seen levels of stress and have elevated the need for even more attention to wellness initiatives for students. Along with the increased sense of urgency comes a growing understanding of the ways that technology innovation can be a force for good in this situation. Vassar College President Elizabeth Bradley and Psychological Science Professor Michele Tugade, writing recently in *EDUCAUSE Review*, make a compelling case for technology-based interventions that they believe "could revolutionize mental health care in higher education."<sup>4</sup>



Continued on page 7





# Redefine Your Approach to Hybrid Learning and Student Success Using the Power of Analytics!

Request a Virtual Fast Track Remote Learning Planning Session

These are unprecedented times. We are all overwhelmed by the impact of the global pandemic on our lives, and never before has our education system been so challenged to quickly adapt to this enormous paradigm shift to a hybrid learning model. This turning point changes the dynamics of how Higher Education views student success and engagement while still maintaining financial well-being.

At CTI, we have created a unique way to manage student engagement by introducing new analytical insights that will identify students at-risk and keep them engaged. We integrate new indicators relevant to hybrid learning such as on-campus vs. on-line attendance, engagement and grade monitoring into our proven analytical solutions for Higher Education.

CTI Fast Track Analytics for Higher Education focuses on three critical aspects of this new model:

- **Financial Stability:** Optimize Admissions and Enrollment
- **Student Experience:** Assess Engagement and Increase Student Success Rates
- **Operational Efficiency:** Balance Faculty, Student and Class Size

Contact Us to request a Fast Track Remote Learning Planning Session for Higher Education.



Continued from page 5

Concurrent with the pandemic stress, significant tensions related to the social outrage and unrest linked to the murder of George Floyd in Minneapolis and racial injustice toward Black individuals will likely continue on campuses. The Black Lives Matter movement demands a new understanding of the world we live in and a dismantling of long-standing structural racism. Yet the pandemic and the racial crises are decidedly not the same: one is linked to a virus that we can reasonably hope to disarm in a certain number of months, whereas the other is a vicious consequence of 400 years of discrimination and injustice.

In addition, the pandemic and its economic impacts have disproportionately impacted specific communities: "Lower-income students were 55 percent more likely to delay graduation than their higher-income peers. COVID-19 also nearly doubled the gap between higher- and lower-income students' expected GPAs."<sup>5</sup> According to the New York Times, "Latino and African-American residents of the United States have been three times as likely to become infected as their white neighbors." Latino and Black people die from COVID-19 nearly twice as often.<sup>6</sup> The Chronicle of Higher Education reports that the combination of the pandemic and racial injustice has taken a toll on students of color and other marginalized groups, underscoring the need for a "new-found urgency to support the mental health of students of color."<sup>7</sup> A spring 2020 study of nearly 20,000 college students found that financial stress and depression rates are increasing with COVID-19 and that 60% of students "indicate that the pandemic has made it more difficult to access mental health care."<sup>8</sup>

As we look toward a challenging fall, institutional leaders must attend to the wellness not only of students but also of staff and faculty. Lee Skallerup Bessette's words written in the early days of COVID-19 remain pertinent: leaders must "acknowledge and validate what your colleagues are experiencing."<sup>9</sup>

## 2020

The year 2020 will be a milestone: the year that brought us a global pandemic, a global recession, and a chance at the progress toward racial justice that has been long overdue and desperately needed. In the throes of such dramatic changes, people naturally focus on the immediate challenges at hand, but in higher education, we would do well to ask ourselves "what's next?" sooner rather than later. We have a remarkable opportunity to return to the accelerating and intensifying trends of digital transformation and wellness with a renewed commitment. I believe it's a bet worth making. ■

## Notes

1. Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel, "Top 10 IT Issues, 2020: The Drive to Digital Transformation Begins," *EDUCAUSE Review* Special Report (January 27, 2020).
2. D. Christopher Brooks and Mark McCormack, *Driving Digital Transformation in Higher Education*, ECAR research report (Louisville, CO: EDUCAUSE, June 2020).
3. Susan Grajek, "EDUCAUSE COVID-19 QuickPoll Results: Early Technology Practices to Support Campus Health," *Data Bytes* (blog), *EDUCAUSE Review*, June 19, 2020.
4. Elizabeth H. Bradley and Michele M. Tugade, "Mental Health in Higher Education: Can a Digital Strategy Help?" *EDUCAUSE Review* 55, no. 2 (2020).
5. Madeline St. Amour, "Report: COVID-19 Has Hurt College Students," *Inside Higher Ed*, June 23, 2020.
6. Richard A. O'Connell et al., "The Fullest Look Yet at the Racial Inequity of Coronavirus," *New York Times*, July 5, 2020.
7. Sarah Brown, "Students of Color Are Not OK: Here's How Colleges Can Support Them," *Chronicle of Higher Education*, July 6, 2020.
8. The Healthy Minds Network and American College Health Association, "The Impact of COVID-19 on College Student Well-Being" [July 2020].
9. Lee Skallerup Bessette, "Affective Labor: The Need for, and Cost of, Workplace Equity," *Transforming Higher Ed* (blog), *EDUCAUSE Review*, March 26, 2020.

John O'Brien is President and CEO of EDUCAUSE.

© 2020 John O'Brien. The text of this article is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

## EDUCAUSE REVIEW

Why IT Matters to Higher Education

**EDITOR-IN-CHIEF**  
D. Teddy Diggs

**DIGITAL MANAGING EDITOR**  
Karen Henry

**MULTIMEDIA PRODUCER**  
Gerry Bayne

**ADVERTISING**  
The Townsend Group

**DESIGN AND PRODUCTION**  
*imagination*  
Caleb Fox, Art Director  
Connie Otto, Project Manager

**COLUMN EDITORS**  
**Connections: Community College Insights**  
Joseph Moreau, Vice Chancellor of Technology and Chief Technology Officer  
Foothill-De Anza Community College District

**E-Content: All Things Digital**  
Mary Lee Kennedy, Executive Director  
Judy Ruttenberg, Director, Scholars and Scholarship Association of Research Libraries (ARL)

**New Horizons: The Technologies Ahead**  
Kristen Eshleman, Director of Innovation Initiatives  
President's Office, Davidson College

**Viewpoints: Today's Hot Topics**  
Barron Koralesky, Chief Information Officer  
Williams College

**EDUCAUSE EXECUTIVE OFFICERS**  
John O'Brien, President and CEO  
Eden Dahlstrom, Vice President for Professional Learning  
Susan Grajek, Vice President for Communities and Research  
Mairéad Martin, Chief Information Officer  
Nicole McWhirter, Chief Planning Officer  
Stacy Ruwe, Vice President for Business Services and Chief Financial Officer  
Catherine Yang, Vice President for Digital Communications and Content



*EDUCAUSE Review* is the general-interest, quarterly magazine published by EDUCAUSE. With a print publication base of 19,000, *EDUCAUSE Review* is sent to EDUCAUSE member representatives as well as to presidents/chancellors, senior academic and administrative leaders, non-IT staff, faculty in all disciplines, librarians, and corporations. It takes a broad look at current developments and trends in information technology, what these mean for higher education, and how they may affect the college/university as a whole.

EDUCAUSE and *EDUCAUSE Review* are registered trademarks. Copyright © 2020 by EDUCAUSE. Materials may be photocopied for noncommercial use without written permission provided appropriate credit is given to both *EDUCAUSE Review* and the author(s). Permission to republish must be sought in writing (contact editor@educase.edu). Statements of fact or opinion are made on the responsibility of the authors alone and do not imply an opinion on the part of the EDUCAUSE Board of Directors, staff, or members. For more information about copyright, see <<http://www.educase.edu/copyright.html>>.

282 Century Place, Suite 5000  
Louisville, CO 80027  
phone: 303-449-4430;  
fax: 303-440-0461  
info@educase.edu  
<http://www.educase.edu/>

For subscription information, contact  
EDUCAUSE: 303-449-4430 (phone) or 303-440-0461 (fax) or <er-sub@educase.edu>.  
For advertising information, phone 720-406-6752, or fax 303-440-0461, or send e-mail to <advertising@educase.edu>.

*EDUCAUSE Review* is also available online at <<http://er.educase.edu>>.







# What Failure Can Teach About Leadership

*“We may encounter many defeats, but we must not be defeated. It may even be necessary to encounter the defeat, so that we can know who we are.”*

— Maya Angelou

**F**ailure is a big part of leadership. Sometimes we fail through our own ignorance. Sometimes failure is a result of taking on a task that is just too big for anyone. And of course, we know that there are many people who hope we will fail.

I am no stranger to failure, but as Maya Angelou reminds us, we must not be defeated.

About a year ago, I asked our university community to develop a charge to do what no other higher education institution has done: to transform into reality the vision of our campus community as a just, equitable, diverse, and inclusive center of learning, where all community members grow, learn, and contribute to the greater good. As a result of many community conversations, a President’s Commission on Justice, Equity, Diversity, and Inclusion (JEDI) was developed. We knew the first year of the project would be messy, but we acknowledged that we were in this for the long haul despite the inevitable challenges we would face.

Indeed, the power of the Commission members’ work lay deep in the messiness that we often try to avoid. This was a significant failure for me: the charge for the Commission did not allow adequate opportunities for community members to properly grapple with this messiness.

The lessons I learned from this failure—or as Angelou puts it, defeat—were far-reaching. As a result, I know better who I am. I know what I need to rise from, and I know the steps I need to take to go further.

First, campus communities need to provide ways to facilitate seemingly impossible conversations—the dialogue that people often shy away from out of fear they will say the wrong thing, offend someone, or express vulnerability. One of the great challenges

we face as a society is our reluctance to “call in” as well as “call out.” While I hope we continue to “call out” actions or words that are unacceptable, I hope we will also “call in” actions or words that we find desirable. Respect is a core value at many higher education institutions, including Arcadia, and I hope we can continue to nurture our work together through our intersectionality and differences.

Second, the JEDI Commission meetings served as building blocks for a community of practice. We have learned so much from our JEDI experience. Too often, we fail to engage in soul-centric reflection and critique—exercises that develop a sense of cultural humility that can unearth our individual and collective responsibilities related to racism. As we at Arcadia think about the next iteration of the JEDI commission, we need to have a community of practice at the core of our work. For example, more student voices are essential, as this initiative is contingent on a community-wide effort.

Third, as a university president with multiple identities, one of which is Asian American, I am particularly sensitive to the traps that pit marginalized groups against one another. We must craft solidarities as people of color and stay vigilant about these traps because they allow people and institutions to avoid responsibility for addressing racism or the damage it continues to inflict. And all our community members, including me, must do the personal work required to disrupt anti-Black racism.

Fourth, this work requires a difficult balance in order to address the tension between urgent change and systemic, structural, and sustainable change. This tension is not always readily apparent to our stakeholders. We must do our best to advance our work within the stipulated deadlines while practicing our community values.

Fifth, although our vision of radical change at Arcadia University is still within reach, we must consider how this work is informed at the personal, institutional, and societal levels in order to succeed. We are developing a framework that will counter unfairness and inequity by pushing community



NEIL WARBURTON/STOCKSY

members to take the following steps: examine their own beliefs, attitudes, and behaviors as a way to help disrupt injustice; investigate the root causes of social issues, including an analysis of intersecting injustices involving people, policies, practices, curricula, organizations, and the institution; facilitate a community of practice so that we can provide a sense of belonging for all community members; and support community members, organizations, and groups that are most vulnerable to injustices. Ultimately, our goal is to provide freedom and liberation to all our community members.

Finally, we must turn our words into action. Despite the challenges we have faced, the JEDI Commission has made significant progress in developing a theory of change to guide our actions, producing a plan to create a database of current JEDI-related programs and activities (including relevant research projects that are in progress as well as courses that focus on JEDI-related topics), and identifying a menu of available data that are relevant to the work of the Commission, along with compiled and coded focus group data from the past few years. This

progress will help suggest benchmarks and targets to measure institutional effectiveness.

Ultimately, my leadership failure was an opportunity for me to better understand the kind of work that will be necessary for us to fully lean into systemic change at Arcadia. After the deaths of Ahmaud Arbery, Breonna Taylor, and George Floyd, I facilitated a conversation with the Commission members. We shared our desire to seek positive transformation in our community, particularly to improve the experience of students of color at Arcadia and to address anti-Black racism. Participating in this conversation was awe-inspiring. We must do this every single day to change the course of history. This is the space I should have created from the very beginning.

No matter how difficult and challenging our work has been, I am proud of how much we have learned this past year and of where we are headed next. ■

Ajay Nair is President of Arcadia University.

© 2020 Ajay Nair

**Sometimes we fail through our own ignorance.** Sometimes failure is a result of taking on a task that is just too big for anyone. And of course, we know that there are many people who hope we will fail.



# A Grand **Strategy** for Grand **Challenges**

**A New Approach through  
**Digital Transformation****



By **Susan Grajek** and  
**D. Christopher Brooks**

Illustrations by  
**Edmon de Haro**



“**We’re in a fix and no mistake,**” said Sam Gamgee. He stood despondently with hunched shoulders beside Frodo, and peered out with puckered eyes into the gloom.”<sup>1</sup> Sam and Frodo Baggins, two hobbits from the pastoral Shire, found themselves alone, ill-equipped, in a hostile and unfamiliar landscape, knowing that the best path to completing their quest lay ahead through that very gloom. The stakes were high: the very future of Middle Earth.

## Sound familiar?

You’ve almost certainly heard or expressed this sentiment recently, as those working in colleges and universities peer out into the gloom ahead, trying to find the best path forward yet knowing that all the territory ahead is new and uncertain and that they are surrounded by obstacles they’ve never encountered before. Just like Frodo and Sam, higher education leaders can’t be certain whether a new situation constitutes an opportunity (a possible supplier/partner) or a threat (a possible competitor). Just as for Frodo and Sam, the stakes are extraordinarily high: the continued existence of individual institutions and the very future of higher education.

Today’s challenges, unprecedented in scope and number, demand a new plan. We propose a different approach, a way for higher education leaders to reframe the work ahead and to judiciously consider how technology can be most helpful. First, leaders should think about their institutional strategic priorities as a set of *Grand Challenges*: challenges that are as important as they are difficult and that pertain specifically to the institution as well as more broadly to the higher education ecosystem. Next, leaders should adopt a *Grand Strategy*, which can provide a cohesive principle and vision to help them consider their resources holistically and focus on their most consequential priorities. Finally, leaders should take into account *digital transformation (Dx)*, which can advance this Grand Strategy by reinventing institutional culture, modernizing workforce practices, and applying new technologies to the missions and management of higher education.

### Higher Education’s Grand Challenges

The term *Grand Challenges* comes to us from another, more hopeful and expansive time. Originally it was used to justify and guide major policy-driven investments in STEM areas in the 20th century. For example, in the late 1980s the US Office of Science and Technology Policy provided funding for “Grand Challenges in Computing” to stimulate the development of applications of high-performance computing in order to increase the competitive advantage of the United States against such advanced nations as Japan.<sup>2</sup> The term has been used in many fields, including energy sciences, engineering, social work, and global health.

A Grand Challenge describes desired outcomes to problems that are extremely difficult (but not impossible) to solve and that are widespread, if not global, in scope. A Grand Challenge is meant to inspire policy makers, funders, the public, and the media to create and amplify an urgent commitment to achieve and accelerate progress. A Grand Challenge may be tackled by





individual organizations, but it also has a community component. Because Grand Challenges are complex, they generally involve ongoing experimentation and learning. Communities can collectively develop a sense of what is possible and where the risks lie.

This is not the first time the term Grand Challenges has been applied to higher education. Almost fifteen years ago, at the 2006 EDUCAUSE Annual Conference, EDUCAUSE President Brian Hawkins described three Grand Challenges: affordability, access, and accountability. Freeman Hrabowski, president of the University of Maryland, Baltimore County, wrote a follow-up column in *EDUCAUSE Review* to share his perspective on how technology could address access and accountability, and he added another Grand Challenge to the list: assessment.<sup>3</sup>

In 2020 we are again applying the concept of Grand Challenges to four of the most consequential and widespread concerns facing higher education today: student success, financial health, reputation and relevance, and external competition. Each Grand Challenge encompasses several issues that institutions are struggling to address (see figure 1). EDUCAUSE staff identified these four Grand Challenges and related issues after interviewing more than forty college and university presidents, provosts, chief business officers, and other institutional leaders in 2019 and 2020.<sup>4</sup>

**Student Success.** The challenge of student success pertains to meeting such key performance indicators as student *persistence* (remaining at the institution), *retention* (completing a course), and *completion* (attaining a credential). *Engagement* and *outcomes* are two additional student success issues. Engagement involves helping students build a rich learning and social experience during their academic years so that they get the most out of their education. Outcomes can be intangible (e.g., expanded horizons), although students and policy makers are increasingly focused on concrete outcomes such as a good job, a useful credential, and low debt.

**Financial Health.** When campus leaders we interviewed spoke of financial health, they described challenges related to income and expenses. In the United States, many institutions have been troubled by decreasing *enrollment* levels (usually due to demographic drops in the number of college-age students), which make it very difficult to budget for and meet ongoing operational *costs*. Another stressor on income is an institution's *funding* model. Publicly funded institutions, in particular, have had to absorb ongoing cuts in funding from state governments. The average US research university received about 33 percent of its funding from the state government in 2012, down from 53 percent in 1987.<sup>5</sup> Endowment income has helped many institutions fund a proportion of their operations, but the major market crashes triggered by the COVID-19 pandemic are reducing that source of income just when enrollments declines for Fall 2020 are anticipated. Even before the pandemic, several leaders we spoke with worried about the disruption of their operations by *natural disasters*. Whether hurricanes or earthquakes—or pandemics—these events have the potential to close an institution, perhaps for good.

**Reputation and Relevance.** In the United States, both the reputation and the relevance of higher education are being questioned as student debt rises and

completion rates stagnate. The public and politicians are losing confidence in the value of a postsecondary education. Institutional leaders we interviewed talked about reputation and relevance when they described their efforts to increase *affordability* for students, improve the quality of *teaching*, introduce more relevant *academic programs*, and expand *research*. Many also were worried about a *political climate* that appears to be increasingly hostile to public-good investments, including higher education.

**External Competition.** External competition was the fourth Grand Challenge that leaders discussed. As public cynicism about the value of higher education has grown apace with student debt, so has the public's interest in *alternative credentials*. Employers are increasingly supplanting or supplementing the college/university education by providing *employer-based learning*—their own training programs that enable them to develop exactly the kinds of skills they need. Students want to earn credentials through options that are more flexible than what institutions are currently providing. US colleges and universities also find themselves newly challenged to attract *talent*. Meanwhile, *global higher education* has begun to threaten US postsecondary preeminence. Countries in Asia, Europe, Australia, and other continents have invested in higher education while US investments have lapsed. For example, government funding for research in the United States is now at 1957 levels (as a percentage of GDP) and ranks 28 out of the 39 OECD (Organisation for Economic Co-operation and Development) nations.<sup>6</sup> The COVID-19 pandemic may exacerbate this parochialism and diminish enrollment and employment of non-US students, scientists, and scholars for many years to come.

Student success, financial health, reputation and relevance, and external competition—these four Grand Challenges can be addressed, at least in part, with technology. For example, solutions to *student success* often involve technologies that help higher education institutions, advisors, faculty, and students better monitor performance and then use advice, nudges, and other interventions to help students complete a course they may be struggling with, find courses they may be more likely to do well in, map out requirements for their desired majors to expedite degree completion, and find resources and build networks to increase students' engagement.

Institutions are also using technology to improve their *financial health*. Analytics and CRM applications can help admissions office staff to find applicants who will most likely enroll and to develop models that will better predict enrollment. Technology, paired with process redesign, can help streamline administrative functions and lower those costs. Online learning and other digital technologies mitigate the impact of a natural disaster or a pandemic by enabling institutions to continue teaching, research, scholarship, and administrative operations even when constituents are not able to be on campus.

Colleges and universities are using technology to improve their *reputation and relevance* as well. They are developing more online learning programs to provide lower-cost degrees, to enrich teaching,

Higher education can't afford to simply chip away at its challenges, advancing at a slow pace in which progress is measured over decades. **Our Grand Challenges have become too urgent.**

and to conduct research. Popular, relatively new academic programs in cybersecurity, robotics, and artificial intelligence are examples of how technology is leading to new curricula as well as supporting curriculum delivery.

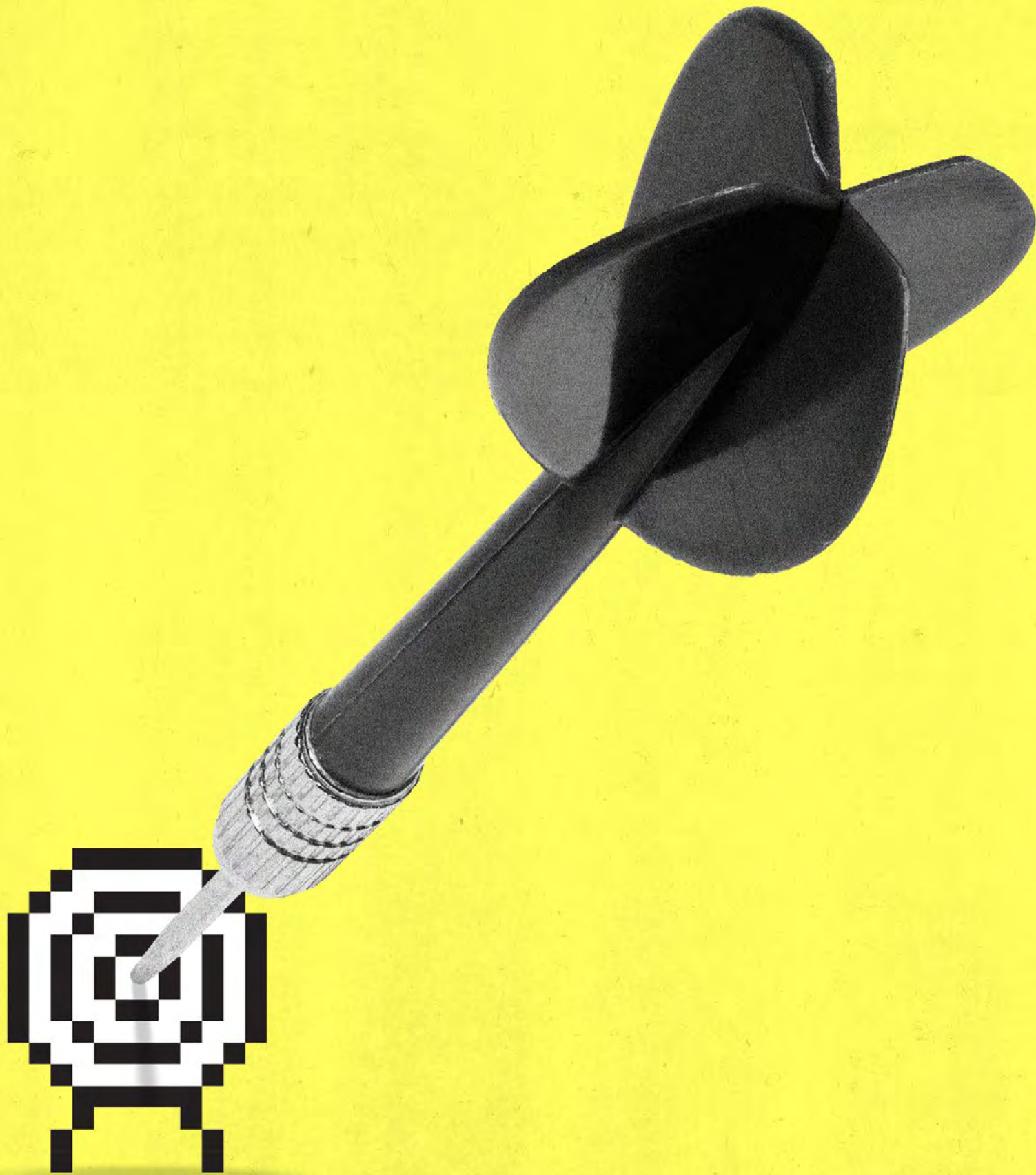
Finally, technological strategies to address *external competition* include providing micro- and even nano-credentials (often delivered digitally and targeted at developing specific skills) to expand options beyond a two- or four-year degree and offering telecommuting options to provide a more flexible working environment.

Applying technology to Grand Challenges can help higher education institutions progress toward their goals. But

Figure 1. Higher Education's Grand Challenges







higher education can't afford to simply chip away at its challenges, advancing at a slow pace in which progress is measured over decades. Our Grand Challenges have become too urgent. They affect the entire higher education sector and thus require focused and ongoing experimentation best achieved by the community working cross-institutionally and collaboratively. Such cross-institutional work will both create and enable a widespread commitment to tackling these challenges, a stronger sense of what's possible, and a shared appreciation of the risks (whether those risks come from not taking action or from taking poorly conceived action).

### Higher Education's Grand Strategy

The Grand Challenges in higher education demand a different approach, one that is both more comprehensive and more focused: a *Grand Strategy*. The concept of a Grand Strategy has its roots in military-political theory. A Grand Strategy provides logic to guide leaders who are seeking security in a complex and insecure world. It is meant to provide clarity of action in unclear circumstances, and it does so by focusing competing interests, diverse threats, scattered resources, and constraining policies on the most consequential outcomes. A Grand Strategy is a vision to steer the plans and behaviors that an organization adopts in order to achieve a desired outcome. If a Grand Challenge is a vision of *what* needs to be achieved, a Grand Strategy is a vision for *how* it can be achieved. It can help colleges and universities avoid "the damaging tendency to do a little everywhere and seek to stamp out fires wherever they burn."<sup>7</sup>

In particular, a Grand Strategy exhibits the following characteristics:

- **A Grand Strategy takes an ecosystem approach.** It encourages institutions to define themselves in relation to their communities, partners, and competitors and to the state, national, and international landscape. Institutional leaders need to consider how their circumstances, culture, and priority will

If a Grand Challenge is a vision of *what* needs to be achieved, a **Grand Strategy is a vision for how it can be achieved.**

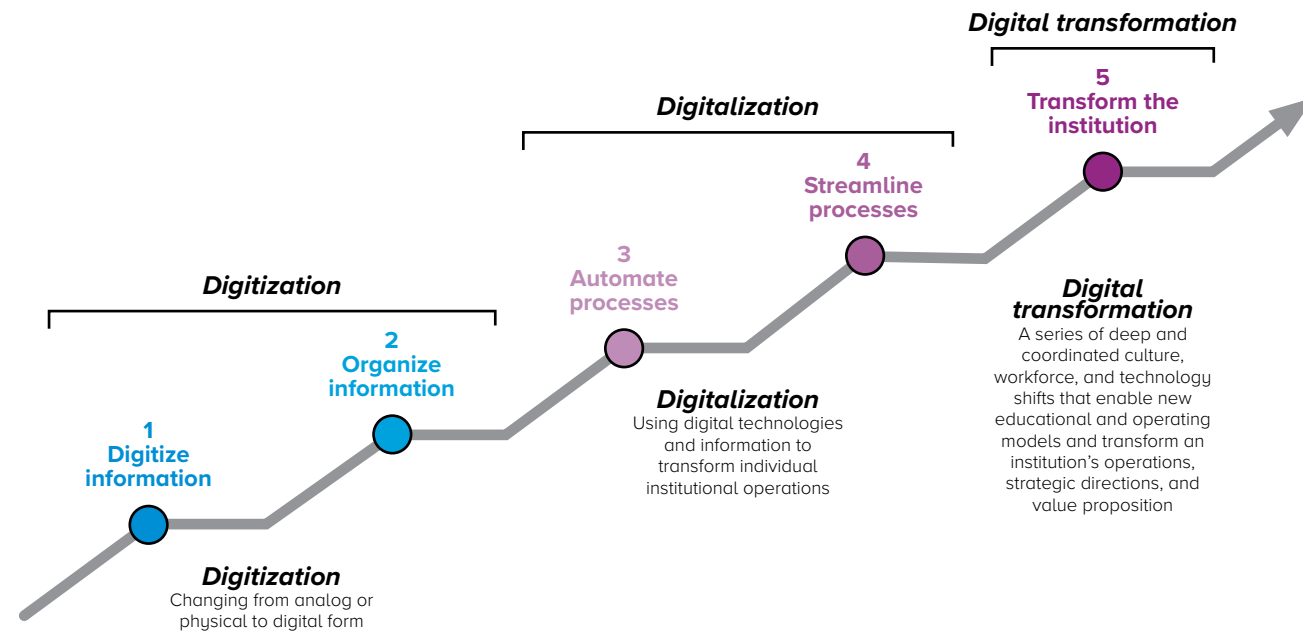
help their college or university thrive in relation to and within the larger higher education ecosystem. In addition, they need to define their role in advancing higher education at large. An institutional Grand Strategy is more likely to be shaped and constrained by ecosystem and institutional factors than by the "blue-sky creativity"<sup>8</sup> of institutional visionaries.

- **A Grand Strategy is long-term.** It is anchored in the institutional mission and vision, rather than in a strategic plan from any particular year.
- **A Grand Strategy provides a guiding strategic framework.** It helps leaders make sense of complexity and bring resources and commitments into alignment. Institutions with a Grand Strategy will have an ecosystem-focused worldview informed by a range of influences including institutional values, collective experience, and careful, continuous study.
- **A Grand Strategy directs strategic planning.** At heart, it is about priorities and choices. A Grand Strategy makes priorities explicit and, in doing so, can help leaders act on—rather than avoid—difficult choices. Simply put, a Grand Strategy makes it easier to say "this, but not that" or "not now."

The Grand Strategy an institution chooses will be shaped by its circumstances, its position in relation to peers and other institutions, and the Grand Challenge it is trying to address. Examples of Grand Strategies that are general enough to apply to higher education include stability, expansion, and retrenchment or classical (be big), adaptive (be fast), visionary (be first), shaping (be the orchestrator), and renewal (be viable).<sup>9</sup> The Grand Challenges will establish the goals, the Grand Strategy will define the approach, and digital transformation will supply the methods by which the approach can enable leaders to achieve their goals.



Figure 2. Digital Transformation in Context



### Digital Transformation

EDUCAUSE defines *digital transformation* as the process of optimizing and transforming the institutional operations, strategic directions, and value proposition through deep and coordinated shifts in culture, workforce, and technology.<sup>10</sup> Those Dx-driven culture, workforce, and technology shifts are also the major changes that institutions need to make today to address the Grand Challenges in higher education.

Digital transformation is often confused with *digitization*: the basic process of changing from analog or physical format (e.g., paper records and texts, in-person lectures, physical models, ID cards), to digital form. Likewise, it is often confused with the next phase: *digitalization*, the process of using digital technologies and information to transform individual institutional operations (e.g., admissions, course registration, research administration, payroll, procurement). Digital transformation is dependent on, but profoundly different from, both (see figure 2). Digital transformation occurs when an institution begins to use digital technologies and affordances to change its business model and to develop new sources of value. Online learning is not digital transformation, but using online learning to offer nano- and micro-credentials to new populations of learners—thus creating new lines of business and income streams, which might offset declining enrollments of traditional students—is an example of digital transformation.

Digital transformation is focused on *institutional* transformation. Optimization or efficiency can be outcomes of digital transformation, but its real potential resides in addressing higher education's Grand Challenges. In August 2019, EDUCAUSE disseminated a survey to higher education IT leaders to explore

their current experiences, attitudes, and practices related to digital transformation at their institutions. Specifically, we asked about seventeen potential benefits of digital transformation and whether those benefits would be minor, moderate, or major. More than three-quarters of respondents believed that all seventeen potential benefits produced by digital transformation would be at least moderate. Figure 3 maps the benefits to the four Grand Challenges and shows the percentage of survey respondents who believed that the benefit would be major.<sup>11</sup>

While only 13 percent of institutions in our study were already engaging in digital transformation, they may shed light on what other institutions will do.<sup>12</sup> Today's Dx efforts are primarily focused on six benefits: improving the student experience; decreasing student drop-out rate or improving retention; improving faculty teaching and advising; improving student course-level performance; containing or reducing costs; and improving the institution's reputation and standing (see figure 4). Four of those six outcomes pertain to student success. The other grand challenges are not being neglected, though. Over half of institutions engaging in digital

Figure 3. Perceived Major Benefits of Digital Transformation

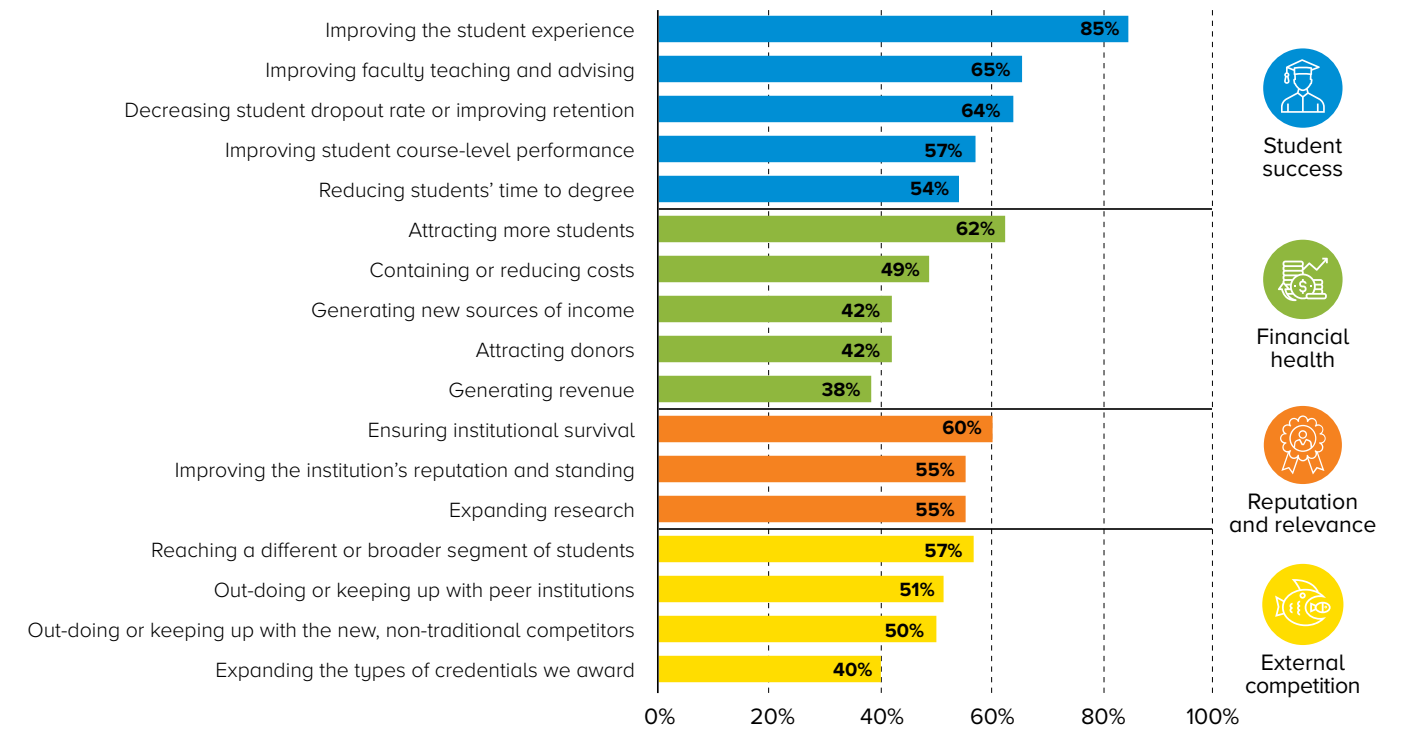
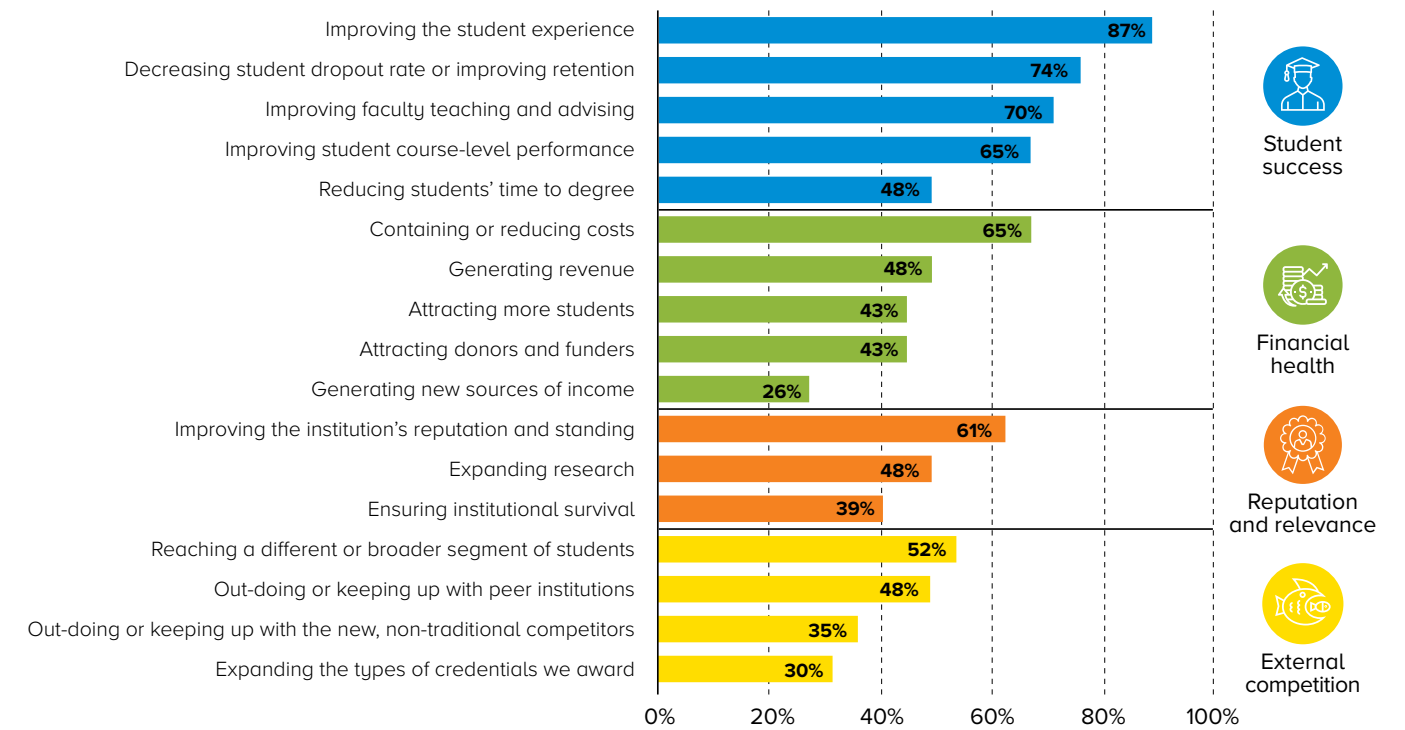


Figure 4. Benefits Driving Current Planning and Investment in Dx





transformation are also focused on outcomes that can advance their reputation and relevance (improving the institution’s reputation and standing), increase financial health (containing or reducing costs), and strengthen their position relative to external competition (reaching a different or broader segment of students).

Digital transformation has clearly been gaining traction in higher education. Our Dx survey found that 67 percent of higher education IT leaders believe that digital transformation is more important now than it was two years ago and that 75 percent anticipate that it will be even more important two years from now. Our research also found that almost one-third (32%) of institutions are developing a Dx strategy and more than one-third (38%) are exploring it.<sup>13</sup>

### The Pandemic: Higher Education’s Fifth Grand Challenge

In March 2020, everything changed. The COVID-19 pandemic damaged endowments, closed campuses, required students and faculty to teach and learn from home environments that were not designed for that use, and threatened the existence of many higher education institutions. Some of the previously mentioned 2020 institutional leadership interviews took place in late March and April. In those conversations, presidents, provosts, chief business officers, and other leaders continued to highlight the strategic importance of enduring themes such as student success, enrollment, and partnerships. But they also raised new challenges:

- **Crisis mitigation:** “[We need] effective response to events over which we have little to no control.”
- **Health and safety:** “The COVID-19 epidemic has created a sea change and caused us to reconsider a lot of assumptions. We’re worried about the safety of our students and staff.”

Figure 5. COVID-19: Higher Education’s Fifth Grand Challenge



- **Digital transformation:** “We plan to reduce or eliminate low-priority services to create budget capacity for investments in digital transformation.” “This whole episode has made us think about the unthinkable. I thought we were ready, but I think this is going to happen again in our lifetime. I’m thinking about worst-case scenarios and how technology will help us.”

With COVID-19 both comprehensively and significantly affecting all of higher education, we have identified it as a fifth Grand Challenge (see figure 5).

### Conclusion

Higher education’s Grand Challenges are pervasive and likely to remain with us, even as the pandemic upends everything. Although the pandemic has certainly changed life as we know it and has disrupted all industries, its long-term impact may be characterized less by what it has destroyed and more by what it has accelerated—namely, trends that were already underway. The business models of higher education have become even more precarious, online teaching and learning are suddenly a core competency for all institutions, and remote working has become a widely viable workforce option.

We think a Grand Strategy can help colleges and universities translate Grand Challenges into comprehensive yet targeted initiatives. Grand Challenges focus the institution on what outcomes need to be achieved. A Grand Strategy focuses the institution on how to achieve those outcomes. A Grand Strategy can help an institution identify the trade-offs it is willing to make and align its constituents in the desired direction. As higher education enters a period of major financial constraints, institutions could benefit from an approach that enables them to best utilize severely limited resources for a shared approach to achieving identified outcomes.

Digital transformation can fuel the Grand Strategy. EDUCAUSE has identified a set of “Dx signals” that can supply an institution with behaviors and actions to help operationalize its Grand Strategy.<sup>14</sup> Whether an institution’s Grand Strategy is focused on remaining viable or on creating innovative differentiation or on scaling up, digital transformation can help shift its culture, its workforce, and its technologies in order to address the five Grand Challenges. Respondents to an EDUCAUSE QuickPoll conducted in April 2020 reported new openness to digital transformation at their institutions:

- “Digital transformation is no longer considered ‘impossible.’”
- “There is high interest in all aspects of digital transformation, using learning data and analytics for student success and widespread adoption of technologies to support student success.”
- “There is a certain sense of optimism coupled with positive attitudes about digital transformation and innovation for teaching and learning—and many other things.”
- “We are moving forward with digital transformation at a greater pace and with much less resistance.”<sup>15</sup>

Respondents also described the speed at which digital transformation is beginning to happen:

**This pandemic may break higher education.** Yet it may also remake it, by forcing shifts that seemed unimaginable just a few months ago.

- “The move to digital has been monumental. We have achieved more change on these fronts over the last six weeks than we have over the last two years. It has enabled people to change, and the outcome is a new path forward.”
- “We have made thirty years of telehealth change in thirty days, allowing better patient access and better [less] physician/faculty burn-out.”<sup>16</sup>

A May 2020 QuickPoll found that almost half (47%) of respondents’ institutions are focusing on digital transformation as a way to reduce institutional costs.<sup>17</sup>

The benefits of digital transformation during the pandemic exceed simply moving missions and operations online. Digital transformation entails fundamental shifts in an institution’s culture and workforce, as well as in the technologies it adopts. Digital transformation requires a culture that values flexibility and agility, has shifted from risk aversion to risk management, adjusts strategy in response to changing circumstances and new opportunities, is adept at change management, and prioritizes cross-organizational alignment and collaboration over siloed goals and autonomous lines of business. The pandemic has forced these culture shifts on colleges and universities, making possible new ways of thinking, working, and leading—ways that until now had seemed unlikely to ever happen at many higher education institutions. Of the many changes that colleges and universities made with astonishing speed this spring, it was the culture changes that were the most astounding and perhaps the most profound.



This pandemic may break higher education. Yet it may also remake it, by forcing shifts that seemed unimaginable just a few months ago. The result may be a more flexible, truly collaborative institution that is open to change and capable of taking strategic risks, an institution with a digitally fluent and inclusive workforce, an institution whose business and funding models acknowledge the continually evolving nature of technology, and an institution that sees the potential of emerging technologies to advance education, research, and student success. These are all components of, and part of the journey toward, digital transformation.

We must make choices, take risks, and act. Today's world demands that we move from deliberation and debate to rapid and responsible action. But to avoid devolving into mere dithering, our actions must be guided by visions of both the "what" and the "how."

We live in difficult times, and we must live up to those times. As our hobbit Frodo despaired to the wizard Gandalf, "I wish it need not have happened in my time." Gandalf replied: "So do I... and so do all who live to see such times. But that is not for them to decide. All we have to decide is what to do with the time that is given us."<sup>18</sup> ■

#### Notes

1. J.R.R. Tolkien, *The Lord of the Rings*, 3 vols. (London: Allen & Unwin, 1954–55), vol. 2, *The Two Towers*.
2. Executive Office of the President, Office of Science and Technology Policy, "A Research and Development Strategy for High Performance Computing," November 20, 1987.
3. Brian Hawkins, "The EDUCAUSE 'Grand Challenges' Initiative," EDUCAUSE Annual Conference, Dallas, TX, October 10, 2006; Freeman A Hrabowski III, "A President's Perspective on EDUCAUSE's 'Grand Challenges,'" *EDUCAUSE Review* 42, no. 4 (July/August 2007).
4. The 2020 interviews were conducted with leaders of higher education institutions represented by the EDUCAUSE 2021 IT Issues Panel. They helped inform the 2021 Top 10 IT Issues (forthcoming in October 2020) and are unpublished. The 2019 interviews were referenced in Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel, "Top 10 IT Issues, 2020: The Drive to Digital Transformation Begins," *EDUCAUSE Review* Special Report, January 27, 2020.
5. "25 Years of Declining State Support for Public Colleges," *Chronicle of Higher Education*, March 3, 2014.
6. Robert D. Atkinson and Caleb Foote, "U.S. Funding for University Research Continues to Slide," Information Technology and Innovation Foundation, October 19, 2019.
7. James Goldgeier and Jeremi Suri, "Revitalizing the U.S. National Security Strategy," *Washington Quarterly* 38, no. 4 (2015).
8. Rebecca Friedman Lissner, "What Is Grand Strategy? Sweeping a Conceptual Minefield," *Texas National Security Review* 2, no. 1 (November 2018).
9. "Grand Strategies," Business Jargons (website), accessed June 29, 2020; Martin Reeves, Knut Haanaes, and Janmejaya Sinha, "Navigating the Dozens of Different Strategy Options," *Harvard Business Review*, June 24, 2015.
10. Malcolm Brown, Betsy Reinitz, and Karen Wetzel, "Digital Transformation Signals: Is Your Institution on the Journey?" *EDUCAUSE Review*, May 12, 2020; D. Christopher Brooks and Mark McCormack, *Driving Digital Transformation in Higher Education*, research report (Louisville, CO: EDUCAUSE, June 2020).
11. Brooks and McCormack, *Driving Digital Transformation in Higher Education*.
12. Ibid.
13. Ibid.
14. Brown, Reinitz, and Wetzel, "Digital Transformation Signals."
15. Unpublished survey respondents from QuickPoll conducted for Susan Grajek, "EDUCAUSE COVID-19 QuickPoll Results: The Technology Workforce," *Data Bytes* (blog), *EDUCAUSE Review*, April 24, 2020.
16. Ibid.
17. Susan Grajek, "EDUCAUSE COVID-19 QuickPoll Results: IT Budgets, 2020–2021," *Data Bytes* (blog), *EDUCAUSE Review*, May 6, 2020.
18. Tolkien, *The Lord of the Rings*, vol. 1, *The Fellowship of the Ring*.

© 2020 Susan Grajek and D. Christopher Brooks. The text of this article is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

**We must make choices, take risks, and act.** Today's world demands that we move from deliberation and debate to rapid and responsible action. But to avoid devolving into mere dithering, **our actions must be guided by visions of both the "what" and the "how."**



**Susan Grajek** is Vice President, Communities and Research, for EDUCAUSE.



**D. Christopher Brooks** is Director of Research for EDUCAUSE.



**MORAN**  
TECHNOLOGY CONSULTING

PEOPLE • PROCESS • TECHNOLOGY



## LOOKING FOR A TRUSTED PARTNER TO HELP YOU MEET YOUR NEEDS?

We are an experienced and proven provider of consulting services to the higher education industry, offering a full range of IT and management consulting services to our clients, including:

- ▶ ERP Transformation, Planning, and Oversight
- ▶ Product/Package Selection and Acquisition Support
- ▶ Strategic IT Assessment and Planning
- ▶ Independent Project Audit/Review
- ▶ Process Re-design and Change Management
- ▶ Security/Compliance Assessment and Remediation

Let us help your organization channel its limited resources more effectively to meet the goals of your institution. We've done projects with over 250 institutions - Let us help you next!

phone 888.699.4440  
[www.MoranTechnology.com](http://www.MoranTechnology.com)

© 2020 Moran Technology Consulting Inc All Rights Reserved





# Digital Transformation It's Time

By Diana G. Oblinger  
Illustrations by Steve McCracken







igital transformation (Dx) may sound like a distraction in today's environment, but it may also be essential. Of the many challenges already facing higher education, three have become unavoidable since the onset of COVID-19.

*First, financial pressures are coming from all sides:* reduced state support; uncertain enrollments; refunds to students; donation and endowment declines. For example:

- The University of Michigan anticipates losses ranging from \$400 million to \$1 billion through the end of the calendar year. The Pennsylvania State System of Higher Education “forecasts a \$52 million loss, even after federal stimulus money is applied.”<sup>1</sup>
- The American Council on Education (ACE) estimates an enrollment drop of 15 percent, including a 25 percent decline in international students. In an April 2020 survey of college and university presidents, 86 percent cited fall or summer enrollment as their most pressing issue (followed by long-term financial viability).<sup>2</sup>
- Students’ financial difficulties will affect enrollment. In a recent poll, 52 percent of students report that a parent has lost a job, been laid off, or furloughed, and 17 percent are “near the point of giving up on attending a 4-year institution full-time in the fall.”<sup>3</sup>
- Nearly half (43 percent) of college and university advancement professionals did not expect to meet their institution’s fund-raising goals this fiscal year.<sup>4</sup>

Higher education institutions typically cope with financial pressures by bringing in additional revenue

or cutting costs. Cutting costs has never been popular in higher education, of course, but there may be no way to avoid it now—both for financial and for equity reasons. As the Harvard scholar (now president) Lawrence S. Bacow said in 2017: “If we fail to cut the growth in college costs, we will not only price many students and their families out of the market but I think we also risk all of public support for higher education, and lacking that support we will never make progress on access.”<sup>5</sup>

*A second unavoidable challenge is the change in the college experience.* Due to COVID-19, faculty, staff, students, and administrators are spending more time online and off-site. Students and parents are concerned about the uneven quality of remote teaching. Interactions go beyond the classroom, of course, ranging from advising to career services to mental health. The loss of face-to-face contact is felt strongly by all. As students return to campus, safety and security will remain major concerns. However, social distancing, testing, and contact tracing will likely alter the college experience even further.

Whether on- or off-campus, reaching faculty, students, and staff where they are is difficult. They may be physically distant. They may be busy or distracted. The essence of “college” is connections—the personal relationships among faculty, staff and students. The way we build knowledge is through making these connections, as well as “connecting the dots” and collaborating. Colleges and universities are driven by connections—among people, disciplines, and communities. Limited proximity challenges those connections and, therefore, the traditional college experience.

*The third challenge since COVID-19 is ongoing uncertainty.* The standard rhythm of higher education has been interrupted by the pandemic, resulting in the need for more flexibility than ever before. While most institutions have relatively fixed schedules from year

to year, the standard schedule is unlikely to work for the fall 2020 term. Many institutions are creating leaner schedules and fewer course options to cope with cost and safety concerns. Some will resume classes only online. Others will start classes earlier and end the term before Thanksgiving. Internships are limited or have gone virtual. Some institutions might close completely; others might merge. In addition, students’ education plans have changed. Some plan to stop-out; others are more likely to attend online-only or seek credentials. Instead of thinking of institutions as having fixed inputs, outputs, timelines, and traditions, today’s higher education leaders must be flexible.

*Digital transformation can help higher education meet all three challenges.* As used in this article, *digital transformation* is not defined by the technology alone but, instead, places more emphasis on the impact of technology on education. Digital transformation can range from the simple to the systemic. It can manifest with cutting-edge technologies and radically new models. Or the transformation may be less dramatic, even low-tech, while still yielding transformative outcomes.

The key to digital transformation may be strategic thinking. The following questions illustrate how digital transformation might help higher education meet the three unavoidable challenges ahead:

- Because of mounting financial pressures, we should ask, “What can we stop doing?”
- Because of the change in the college experience, we should ask, “How can we reach people where they are?”
- Because of the ongoing uncertainty in higher education, we should ask, “What would make us more resilient?”

It’s time to use digital transformation—a model in which the digital meets the physical—to address higher education’s challenges and create new opportunities.



### What Can We Stop Doing?

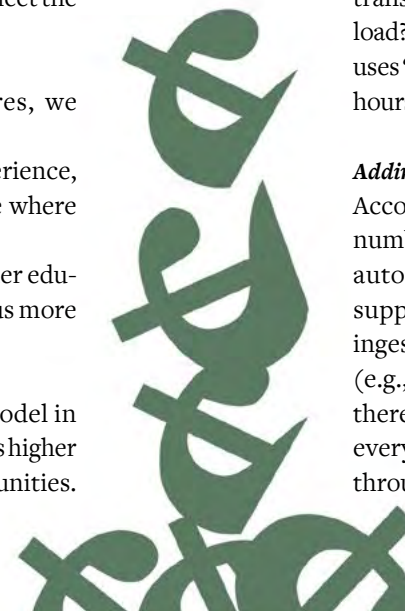
Smart machines today allow us to change the way we work, complementing human efforts and giving us time to do other things. There may be no better time to ask, “What can we stop doing?” As Harvard Business School Professor Michael Porter has said, “The essence of strategy is choosing what not to do.”

### Saving Time

At Flinders University in Australia, high-achieving students are sent award letters, three times a year. Doing so is a lot of work. Twenty-four thousand students must be evaluated to determine their eligibility—a task involving 45 manual steps. Once those students are screened, staff must prepare and send recognition letters. Next, each student’s records must be updated, requiring 17,000 transactions. Flinders’ answer to reducing this workload? Robotic process automation. The university now uses “Betty the bot” and annually saves more than 1,800 hours of staff time—nearly one FTE.<sup>6</sup>

### Adding More Value

Accounts receivable offices typically handle massive numbers of invoices with few staff. Robotic process automation can streamline the process. When a supplier submits an invoice, the procurement bot ingests the invoice, digitizes it, and performs checks (e.g., missing information, purchase order limit). If there are errors, the bot requests information. When everything is complete, workflow moves the invoice through approval and payout.







***If the key to digital transformation is strategic thinking, we might ask ourselves: “What is the best use of our human capital?” What if we allow machines to use their intelligence so that we can focus on the unique ways humans use their intelligence?***

Automation not only can save time and money but also can reduce risk and improve compliance. In a KPMG study, for example, procurement contract compliance improved, on average, from 30 percent to 78 percent. The results of automation can be more subtle as well. As routine work is offloaded, staff can take on more complex or personal tasks. For example, Arizona State University is relocating procurement personnel from the central office to departments to work directly with faculty and staff. Their role is to do more than buy things—they add greater value by expanding supplier relationships and using their professional expertise to address departmental needs.<sup>7</sup>

#### ***Making Time for People***

Time also matters in advancement and alumni relations offices, both staff time and donor/alumni time. Alumni value shorter forms of communication, not just newsletters or alumni magazines: indeed, 37 percent say they prefer receiving information via periodic text messaging.<sup>8</sup>

Texts can do more than provide information. Fundraising from mobile devices increased 205 percent in 2019. Of all mobile giving, 49 percent occurs in response to text links, saving time in multiple ways. First, there is an almost instantaneous open rate for texts. In addition, 98 percent of text messages are read, compared with just 20 percent of emails. Finally, texts are responded to within 90 seconds; emails are responded to within 90 minutes.<sup>9</sup>

In addition, artificial intelligence can save advancement staff time by improving the discovery and prospect-qualification process and gathering and synthesizing information from social media, alumni responses, and campus CRM systems. It can be used to draft personalized emails to be used in outreach, mirroring a fundraiser’s writing style. AI chatbots can start a conversation with donors, glean information, and produce viable leads. In essence, artificial intelligence frees up people to talk to people.

#### ***Being Proactive***

What if machines could anticipate when there might be a problem with campus facilities (e.g., classrooms, laboratories, dorms, fitness centers)? Early warning signals can indeed predict when there might be a problem (e.g., with structure, lighting, water, HVAC, energy, equipment), alerting humans to actions needed. Anticipating and fixing problems before they occur—a process called fault detection and diagnosis (FDD)—can save time and money, reduce risks, and lead to improved performance. FDD systems can also yield energy savings, lower maintenance costs, decrease the number of service calls, and find hidden waste. An investment in FDD is repaid in slightly over one year.<sup>10</sup>

As mechanical performance declines, the cost to repair goes up, so it makes sense to correct defects as early as possible. Sensors can detect a potential fault long before a human can. Because most buildings and equipment systems are embedded with sensors, a combination of the internet of things (IoT) and artificial intelligence allows device and appliance “health” to be monitored. The goal is to use IoT to sense faults early and diagnose potential causes. This allows AI tools to predict the degradation time, the cost to fix, and the impact on human activity (e.g., poor air quality), making it possible for mechanics to prioritize the repair. A dashboard can be generated to detail what to fix and how, sorted by priorities such as energy, comfort, or cost. Once a repair decision is made, the system can schedule labor, generate the work-orders, and document completion of the repair.<sup>11</sup>



### Reducing Duplication

Duplicative infrastructure or services can be costly and cumbersome. Many institutions are gaining efficiencies through sharing, consolidation, or virtualization.

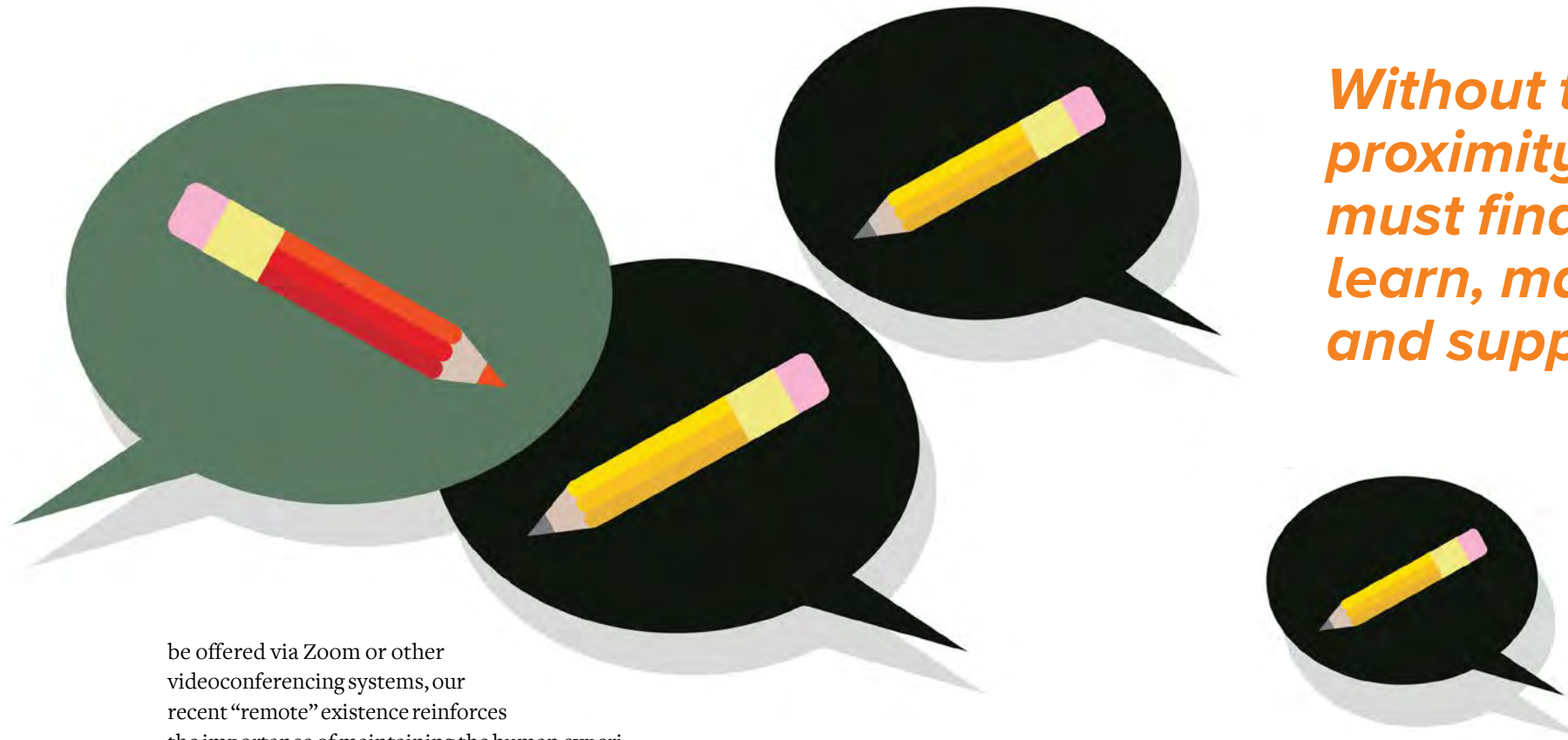
In the California Community Colleges System (with 2.1 million students), each institution operates its own systems such as student information system (SIS) or enterprise resource planning (ERP) system. Separate systems make data sharing difficult, whether for internal use or for federal or state reporting. The California Community Colleges Cohort for Information Systems (4CIS), comprising four community college districts (Coast, Foothill-De Anza, Kern, and Pasadena) is piloting the development of a shared model for a cloud-based ERP to help streamline processes and realize economies of scale in back-office operations. Benefits from a unified system will include cost savings as a result of the reduced need to purchase hardware, support data centers, and hire specialized staff to manage the ERP. Estimates are that the cloud-based, standardized model will save at least \$1.96 million in annual IT costs (e.g., from software licensing, hardware, and energy costs). In addition, staff will be able to concentrate on higher-value activities, such as directly supporting students and other staff.<sup>12</sup>

### An Opportunity to Think Differently

There are many tools and processes to choose from when we think about implementing Dx—robotic process automation, artificial intelligence, and the IoT, to name a few. However, if the key to digital transformation is strategic thinking, we might ask ourselves: “What is the best use of our human capital?” What if we allow machines to use their intelligence so that we can focus on the unique ways humans use their intelligence? If machines take on more tasks, the freed-up human time can be devoted to personal connections, innovation, and higher-value activities. We can implement Dx to automate, anticipate, conserve, and consolidate. Digital transformation can enable smarter operations, untethering people from the work that machines can do. Dx also generates data. With this data, institutions can not only track operations but also optimize resources and results.

### How Can We Reach People Where They Are?

It’s time to use digital transformation to extend and enhance the college experience. Even if a campus is closed, we try to stay in touch using technology to communicate and to maintain a sense of community. Whether or not classes and staff meetings continue to



be offered via Zoom or other videoconferencing systems, our recent “remote” existence reinforces the importance of maintaining the human experience in higher education and of reaching people wherever they are. Without the physical proximity of a campus, we must find different ways to learn, maintain connections, and support each other.

### Being There

All professions require interaction with others. Teachers educate children. Social workers collect case histories from clients. Nurses care for patients. Hiring managers interview candidates. Communication, negotiation, and empathy are among the interpersonal skills we value in our professions.

Practicing in a “safe space”—a place to try, fail, and try again—can help professionals develop and gain confidence in these interpersonal skills. Mursion specializes in creating mixed-reality environments in 2D or 3D, having had its start at the University of Central Florida as TeachLivE. For example, a teacher interacts with highly realistic and customizable student avatars. Each student has different characteristics and personalities (e.g., shy, disruptive). Various scenarios give candidates the opportunity to “try out” parts of teaching (e.g., regaining control of a difficult situation) by blending face-to-face communication with the anonymity of online environments. For example, simulations for elementary math and science teachers provide practice supporting classroom discussion while ensuring that the content is represented accurately.<sup>13</sup>

Avatars can appear as coaches as well as characters. Photographic rendering, voice morphing, auto-talk, and head-tracking improve the realism of the avatars. Artificial

intelligence, trained on large data sets, indirectly enables conversations by controlling the avatar’s body language, facial expressions, and lip synchronization. Using a “human-in-the-loop” approach, avatars are controlled by a human “simulation specialist” who can play multiple characters at one time. The technology blends real-time intent recognition and rendering, artificial intelligence, distributed networking, and bidirectional audio/video.<sup>14</sup>

According to one study, teachers who participated in four 10-minute simulation sessions for targeted teaching behaviors outperformed their colleagues who did not. Additional research confirms that the simulation combined with coaching results in large improvements in skills. Finally, 90 percent of teachers agreed that the avatars represent the types of students they encounter in their classrooms. Interacting with other humans via avatars thus provides a unique combination of engagement and anonymity resulting in increased self-disclosure.<sup>15</sup>

Simulations are also valuable for soft-skill development (e.g., diversity and inclusiveness training). The American Association of Colleges for Teacher Education (AACTE) uses simulations for its Leadership Academy for department chairs and deans. Researchers in the Computer Science Department at the University of Virginia are exploring simulation as a way for faculty to better recognize and mitigate gender bias in lecture settings. And at the University of Texas

**Without the physical proximity of a campus, we must find different ways to learn, maintain connections, and support each other.**

Rio Grande Valley, the use of simulations has expanded from teacher prep to other areas such as medical students practicing end-of-life conversations.<sup>16</sup>

### Learning in 3D

3D holograms offer another mixed reality opportunity for enhancing the learning experience. Case Western Reserve University developed a complete male and female anatomy suite—HoloAnatomy—to teach human anatomy using 3D holograms. Students can see parts of the body (e.g., nerves that are not viewable in a human), collaborate with experts, and see what others see—in real time. The transparent visor of the Microsoft HoloLens headset allows students to see and hear each other as they interact with a digital anatomy object. Faculty can point out specific anatomical features, and students can help their classmates all while “being inside the body.” Organs can be separated, enlarged, and viewed from multiple angles. Rather than learning anatomy from a cadaver, students experience living colors and textures and see how organs function. The performance of students taught using HoloAnatomy’s mixed reality program was comparable to those using traditional methods (e.g., dissecting a cadaver). But with HoloAnatomy, 40 percent less classroom time was needed to cover the required learning. The system will soon be used by five other higher education institutions. Beyond human anatomy, 3D holograms are used in fields such as genetics, chemistry, art, dance, engineering, and paleontology.<sup>17</sup>



**Making Complexity Manageable**

It can be hard to reach students who are distracted. The intent of much of student-directed communication is to elicit action, such as to register for classes or apply for financial aid. However, simply providing information may not be sufficient. People make decisions with imperfect information, in part because we have limited cognitive capacity. For example, students with young children have nearly 90 extra hours of tasks every week, resulting in “time poverty.”<sup>18</sup> We tend to focus on what stands out, not necessarily what is most important. Behavioral science, the study of how people make decisions and either do or do not follow through, can enhance communication. When combined with texts or emails, it can provide a “nudge.”

Behavioral approaches go beyond introducing personalization (e.g., adding a student’s name at the top of a message) to understanding what actions a student has taken and suggesting the next step at just the right time. Behaviorally designed communications improve outcomes by getting attention, tailoring the message, and making action easy. Research has shown that altering just 3 percent of words in a message can make a difference.<sup>19</sup>

Nudging can be helpful with financial aid—which is a critical stumbling block in many students’ enrollment and retention success. Financial information is complex and confusing. Text nudges can simplify and break down complicated tasks into more manageable messages. Proactively sending out action items around deadlines ensures that the right messages reach students at the right time. In a randomized control trial involving 63,000 Arizona State University students, a series of eight emails were sent over eight weeks to students and their parents, providing them with reminders and instructions that made it easy to execute the next step needed for financial aid. Admissions increased from 29 percent to 50 percent when both student and parent received the emails. Had all students received such messages, an estimated 1,124 additional students would have filed the Free Application for Federal Student Aid (FAFSA), receiving \$27 million more in financial aid. The cost of the program, if scaled across all continuing ASU students, was estimated to be less than \$0.15 for each additional student who filed before the deadline.<sup>20</sup>

Borrowing money can be problematic for students as well. They may lack information about loans (e.g., how much is too much or too little, how much their monthly payments will be) and access to counselors who can help. In a randomized controlled trial at

**It is easy to think of the college or university as a place. But higher education is also about services, support, and connections. Today, the backbone of the college experience isn’t just the physical environment but also the digital one.**

the Community College of Baltimore County (MD) students received a series of eight text messages. As a result of the campaign, students borrowed 9 percent less in total Stafford loans (from \$2,401 to \$2,218) and 12 percent less in unsubsidized Stafford loans (from \$1,301 to \$1,156). The declines were most significant—10 percent to 27 percent—among students with the lowest incomes.<sup>21</sup>

**Coping with Stress**

Even before the pandemic, students’ mental health was a concern: in 2019, roughly 9.2 million students experienced a diagnosable mental health issue. In April 2020, 80 percent of students surveyed said that COVID-19 had negatively affected their mental health; they most commonly cited stress or anxiety, disappointment or sadness, loneliness or isolation. A COVID messaging framework (see figure 1) can help institutions reach students with regular, direct communication that helps them prepare for the “next normal.”<sup>22</sup>

Actions required to comply with a new policy, such as a COVID-19 form, can be texted just-in-time. To alert students who may have been exposed to the virus, a text generated by the contact tracing system can direct a student to schedule time with a contact tracer. The text can also ask, “How are you feeling?” Depending on the response, the student might be directed to the health center for testing or a professional might intervene. AI-powered automated responses, interwoven with personal interactions, can individualize messages, encourage two-way communication, and direct students to resources, as well as show empathy and understanding for the stress they are experiencing.

**An Opportunity to Think Differently**

It is easy to think of the college or university as a place. But higher education is also about services, support, and connections. Today, the backbone of the college experience isn’t just the physical environment but also the digital one. Using data, might institutions sense and respond to students’ needs with more tailored experiences? Institutional leaders know a lot about students thanks to data. A college or university can “reach people where they are”—not just in a classroom but at the *point of need*. What does an anatomy student need? One answer might be a cadaver lab. Another might be a holographic 3D experience that integrates the digital and the physical. What does a student who is at risk of losing financial aid need? Perhaps a text-based nudge that is individualized to precisely the action that the student needs to take,

right now. For a student who needs to learn how to be a more effective teacher, perhaps the answer is a human-in-the-loop simulation. Could we transform higher education if the “experience” was predicated on a *need* and not only a *place*?

**What Would Make Us More Resilient?**

Many campuses closed in March 2020 due to COVID-19. Some may reopen in the fall of 2020; others may not. Whether for three months or six months or a year, we are all having different experiences now, in changed environments—videoconferencing, working from home, maintaining our distance. Those experiences are reshaping our expectations. Whether it is changing expectations or a changing environment, can our institutions become more resilient and ready for what comes next?

Resilience is the ability to sense and respond to change. It can be a personal attribute or an institutional one. Resilience can mean identifying and mitigating risks before a potential crisis. It also can mean being able to bounce back quickly after a crisis. Now is the time to use Dx to build long-term resilience for higher education.<sup>23</sup>

**Skills as a Source of Resilience**

COVID-19 is creating a new economic landscape in which skills will be an important source of resilience. People who have lost jobs may need to reskill for new roles. New technologies and new ways of working will require others to upskill. College/university graduates

**Figure 1. COVID Communication Framework**

	AWARENESS	ACTION	SUPPORT	TRIAGE
COVID Compliance	Alert students to new expectations with clear process timelines	Engage students to take action with ties to desired activities	Offer students escalated levels of guidance and easy lines to expectations	Quickly identify students not in compliance
Testing Practices				
Tracing Practices				
Policy Updates				
Facilities Access				
Virtual/Online Support Services				
	RISK TO INSTITUTION	RISK TO PROGRAM	RISK TO SELF	RISK TO OTHERS

Source: Rachel Hicks, “COVID Communications Toolkit: Planning for Fall,” *Signal Vine*, June 18, 2020. Reprinted with permission.



are not exempt; they may need to retool quickly to adapt to a rapidly shifting economy.

For example, a graduate may need digital skills for career advancement. Rather than pursuing another degree in computer science, the graduate may simply require a credential in Python. Or someone with an accounting degree may be finding more opportunities in cybersecurity. Rather than starting over again, the graduate could bundle the degree in accounting with a global information assurance certificate (GAIC) to qualify for a cybersecurity position. Students, workers, and educators want to know which fields are growing or stagnating, the quickest path to various careers, and earnings over time. Understanding the skills needed for a career, not just the degree or coursework, may provide resilience.

Having a common skill language is a prerequisite to matching skills-sought to skills-taught. Using machine learning, extraction, and cluster analysis, the labor market analytics firm Emsi has created a skill-tagging system can translate job postings, resumes, or syllabi into a frequently updated, common skills library. With over 30,000 defined skills, the library provides much greater granularity than the 974 occupational codes historically used to describe the US workforce.

Individuals can gain additional resilience by understanding what skill(s) might position them for a promotion and how their existing skills qualify them for different career paths. The skills developed by English majors, for example, might make them 85 percent qualified for a role in digital marketing—an area of job growth that rivals the growth in some areas of information technology. Credentials in search engine optimization (SEO) and cloud computing skills might allow an individual to qualify for marketing or advertising roles that require a combination of writing ability and technical savvy. Tools can help individuals inventory their current skills, match their existing skills to job postings, and identify skills that prepare them for what's next.

#### **Personal Resilience**

Resiliency is needed in many types of situations. Resiliency can help someone overcome personal barriers to success (e.g., family, finances) or community barriers to success (e.g., natural disasters, racial discord). Resiliency is critically important in some professions, such as health care.

In 2013, in the aftermath of major US disasters such as Hurricane Sandy and the Boston Marathon

***With the anticipated decline in traditional as well as international students, revenue generated by credentialing programs is increasingly attractive as a supplement to tuition dollars.***



bombings, seven community colleges, in partnerships with Achieving the Dream, formed the Northeast Resiliency Consortium (NRC) to create materials that would help students develop resiliency. The intent was not just to prepare for disasters but to assist individuals in addressing the continual need to reinvent themselves. The colleges developed a resiliency competency model and integrated those competencies into the curriculum along with adaptive learning tools.<sup>24</sup>

The NRC resiliency competency model defines the knowledge, skills, and resources that help students to persist during times of crisis as well as to thrive at work and in their personal lives. In the Dot Resiliency Series, ten lessons—involving animations, simulations, and adaptive and game-based learning—build the learner's resiliency. Using a conversational approach, the learner teaches an AI character, "Dot," about human resiliency. As the learner progresses through a lesson, he or she will be guided down relevant pathways with games, puzzles, and challenges and then will be given differentiated feedback and individual support. Students reflect on their own experiences; "Dot" helps them practice new skills.

Today, resilience is integrated into many campus orientation sessions as well as courses in the belief that wellness is an important life skill that students can carry into their careers. Topics may include resilience training, optimistic vocabulary training, and stress management. The University of Pennsylvania Law School goes beyond personal health to focus on wellness through the lens of professional responsibility. Its required, upper-level course emphasizes lawyers' ethical responsibility to take care of themselves in order to take care of their clients.<sup>25</sup>

#### **Operational Resilience**

Institutions also need resilience. Digital transformation allows institutions to adapt operations in times of discontinuity. For example, when students at Case Western Reserve University had to leave campus in mid-March due to COVID-19, HoloLens mixed reality devices loaded with the digital anatomy curriculum were sent to about 200 medical school students so that they could continue to learn from home. And since avatars aren't contagious, AACTE and Mursion collaborated in May 2020 to provide teacher candidates with an opportunity to complete clinical field experiences remotely without compromising anyone's health and safety.<sup>26</sup>

Fault detection and diagnosis (FDD) has preserved continuity and optimized operations even during COVID-19. While the University of Iowa has been

in stay-at-home mode, there have been few building occupants to call in a problem and no staff to investigate and respond. The buildings have the system intelligence (i.e., FDD) to discover failures or faults on their own, without the need to send employees to check spaces. And as buildings are reoccupied, the ventilation and filtration provided by heating and air conditioning systems will take on new importance because of the airborne transmission of the virus. FDD will allow the review of ventilation and fresh-air volumes, ensuring that underventilated spaces (which might have a higher concentration of virus particles) are quickly identified and corrected.<sup>27</sup>

#### **Financial Resilience**

Resilience may never have been more important for higher education finances than now. Financial pressures are accelerating interest in alternative revenue sources. With the anticipated decline in traditional as well as international students, revenue generated by credentialing programs is increasingly attractive as a supplement to tuition dollars. Creating a credentialing program does not necessarily require starting from scratch, however. Institutions can repackage the knowledge and skills in existing degree programs. Skills can be identified within a course and then "unbundled" or broken into components. Those components can be reassembled to create micro-credentials both as alternatives and as supplements to a degree. For example, business intelligence tools like Tableau may already be taught in the business or IT departments while principles of design are covered in a media arts program. These skills can be rebundled into a data visualization credential that could help a working business analyst upskill or pivot to a new role. Gaining experience with micro-credentials might be both a current and a future institutional resiliency strategy: a 2018 US survey of human resource professionals indicated that within five years, micro-credentials and digital badges may be potential challengers to degrees in the hiring process.<sup>28</sup>

One potential market for micro-credentials are employers who have increasingly invested in "education as a benefit." The corporate tuition reimbursement market is estimated at \$20 billion. And 37 million Americans have some college credit but no degree, representing a larger market than the traditional 18- to 22-year-old population.<sup>29</sup>

#### **Interconnectedness**

Students and workers, as well as educators and employers, are connected through education, skills, and employment. A poor connection between any of



these segments can cause the entire system to slow or stutter. “Big data” approaches, combining real-time labor market information (e.g., millions of unique job postings and professional profiles) with analytical methods, can extract the skills that employers are looking for and can reveal how skills-needed compare with skills-available in the regional workforce. Supply-and-demand data, along with active engagement with employers, allows educational providers to design and refine program offerings, curriculum, and credentials that are tightly coupled with labor market demands.<sup>30</sup>

The Business Higher Education Forum (BHEF) is leading a collaboration among regional employers, higher education institutions, and workforce/economic development agencies. The goal is to close skill gaps in digital technologies (e.g., data analytics, cybersecurity, cloud computing, networking, artificial intelligence, machine learning) through the following actions:

- Employers will develop customized upskilling agendas by mapping career pathways and identifying relevant programs.
- Colleges and universities will align skills-sought to skills-taught by automated competency mapping and will develop micro-credentials to meet the needs of employers and learners.
- Blockchain will be used for credential management.

The intended outcome is to develop new talent, upskill current employees, and ensure that women and underrepresented minorities are engaged in all talent strategies.<sup>31</sup> The ultimate goal is resiliency—for individuals, educators, and employers—that will lead to economic vitality.

#### ***An Opportunity to Think Differently***

Beyond focusing on “getting back to normal,” perhaps we should also be finding ways to become more resilient. Much of the COVID-19 experience has been about taking an analog experience and making it digital (e.g., remote learning). The shift had to happen quickly—there was no time to think about transformation. Do we now have an opportunity to think differently about the shifts ahead?

Part of the value of the college experience is the “coming of age” process. Can we reimagine how to achieve that growth in less time and/or with a different use of space? For example, what if students came to campus in three-month increments instead of for nine months? Can a “gap year” become a valuable part of the college experience? Another critical aspect of

***In a world that was already changing rapidly before COVID-19, perhaps we could all benefit from resiliency—not just to reduce personal stress but also to help us think differently.***

higher education is preparing for a job after graduation. Should students cycle more often between courses and internships? Should we proactively integrate skills-based learning with disciplinary programs? A third part of the college experience is “enlightenment,” when students learn much more about the world and themselves. Can that be digitally transformed?

In a world that was already changing rapidly before COVID-19, perhaps we could all benefit from resiliency—not just to reduce personal stress but also to help us think differently.

#### **It's Time**

Digital transformation comes in many forms—only a few of which are described here. It's time to use digital transformation and strategic thinking to address the three unavoidable challenges ahead: financial pressure, challenges to the college experience, and ongoing uncertainty. Asking the right questions, not just using the right technologies, will lead us to the best answers.

Choosing what not to do doesn't mean that the work goes undone. Technology is altering the day-to-day mix of activities. Some activities can be done just as effectively, if not better, by machines, freeing people's time for other things. Machines use their own intelligence,

# the best thinking in higher education IT

EDUCAUSE ANNUAL CONFERENCE 2020

October 27–30 | Boston, MA & Online

The premier higher ed IT event brings together professionals and technology providers from around the world to share ideas, grow professionally, and discover solutions to today's challenges. Join the best thinking in higher ed IT this fall.

Learn more at:  
[events.educause.edu/annual-conference](https://events.educause.edu/annual-conference).



not ours. Humans are necessary to leverage the full potential of these technologies.

Physical proximity is not the only way we can be together. Because higher education is about connections, thinking about how we reach people wherever they are is more important than ever. This involves more than providing information and more than offering remote learning. That “reach” must be made effective and engaging—academically, socially, and emotionally. Doing so is about moving people from where they are to where they need to go next. It is about being sure people see their potential and reach it.

Resilience, the process by which we sense and respond to change, will help sustain higher education. While many things have changed, the mission of higher education remains the same. Our processes might shift to shorter degree times or to credential programs or to closer linkages with industry. The adaptations won’t be arbitrary, they will be based on data, experiences, and needs.

We may think that we don’t have time for digital transformation right now. But if we make time for it, time may be what we get in return.

The last few months have taught everyone in higher education a lot about our digital capability, our agility, and our needs. Now is the time to capitalize on what we’ve learned to make higher education stronger. It’s time for digital transformation. ■

#### Notes

1. Paul N. Friga, “Under Covid-19, University Budgets Like We’ve Never Seen Before,” *Chronicle of Higher Education*, April 20, 2020; Emma Whitford, “Can Public College Systems Stave Off Closures?” *Inside Higher Ed*, April 22, 2020.
2. ACE, “Higher Education Community Requests \$46.6 Billion,” news release, April 10, 2020; Jonathan Turk, Maria Claudia Soler Salazar, and Darsella Vigil, “College and University Presidents Respond to COVID-19,” ACE, April 23, 2020.
3. Art & Science Group, “Looking Ahead to Fall 2020,” *Student Poll*, April 2020.
4. Emily Haynes, “43% of College Fund Raisers Don’t Expect to Meet Goals,” *Chronicle of Higher Education*, April 20, 2020.
5. Lawrence S. Bacow, “The Political Economy of Cost Control on a University Campus,” Clark Kerr Lecture, University of California at Berkeley, April 20, 2017.
6. Zarine, “RPA Case Study in Higher Education,” *LinkedIn*, March 21, 2019; Anthony Bosisto, “Robotic Process Automation & AI in Higher Education Conference 2019,” *LinkedIn*, May 12, 2019.
7. KPMG, “Delivering Value in Procurement with Robotic Process Automation,” January 2018; personal communication (phone) with Nichol Luoma, Arizona State University (NAEP past president), October 1, 2019.
8. Signal Vine, “The Alumni Engagement Playbook: How to Foster Relationships with Your Graduates,” [January 28, 2020].
9. Ibid.
10. Hannah Kramer et al., “Synthesis of Year Three Outcomes in the Smart Energy Analytics Campaign,” Building Technology and Urban Systems Division, Lawrence Berkeley National Laboratory, September 2019.
11. Service Channel, “4 Revolutionary Applications of AI in Facilities Management,” May 16, 2019.
12. Richard Palmer and Joyce Kim, “Digital Transformation: Shared Technology Environments Deliver Greater Benefits Than Going It Alone,” Ovum Consulting, September 10, 2019; personal communication (email) with Joseph Moreau, Vice Chancellor, Technology, Foothill–De Anza Community College District, May 26, 2020.
13. Deanna Ferrante, “Kickin’ It New School,” *Pegasus*, Spring 2017.

The simulations were developed by Mursion in partnership with the Educational Testing Service and funded by the National Science Foundation. See “Getting Hands-On Experience in a Virtual World,” ETS Open Notes (website), n.d.

14. Lydia Dishman “The High-Tech Solution to Becoming More Empathetic in Less Than an Hour,” *Fast Company*, March 25, 2019.
15. Lisa A. Dieker et al., “Using Simulated Virtual Environments to Improve Teacher Performance,” *School-University Partnerships* 10, no. 3 (2017); Carrie Straub et al., “Using Virtual Rehearsal in TLE TeachLive Mixed Reality Classroom Simulator,” TeachLive National Research Project, 2014.
16. Personal communication (Zoom) with Julie Cohen, University of Virginia, May 12, 2020; personal communication (Zoom) with Patty McHatton, University of Texas Rio Grande Valley, May 15, 2020.
17. Sue B. Workman, “Mixed Reality: A Revolutionary Breakthrough in Teaching and Learning,” *EDUCAUSE Review*, July 30, 2018; “University’s HoloAnatomy Spreads to Other Campuses,” Case Western Reserve University, *The Daily*, January 22, 2020.
18. CAEL and ideas42, “Student Parents and Behavioral Science” [2020].
19. Harrison Neuert et al., “Getting Students to Day One,” ideas42 report, April 2019.
20. “Nudging for Success,” ideas42 report, June 2016.
21. Ibid.
22. Sara Abelson, “College Student Mental Health,” GLCA Presidential Summit, December 2019; Active Minds, “COVID-19 Impact on College Student Mental Health,” infographic, April 2020; Rachel Hicks, “COVID Communications Toolkit: Planning for Fall,” *Signal Vine*, June 18, 2020.
23. Chelsea Waite, “Envisioning the 7 Habits of Highly Resilient Schools,” Christensen Institute (website), May 14, 2020.
24. The seven colleges are Atlantic Cape Community College (NJ), Bunker Hill Community College (MA), Capital Community College (CT), Housatonic Community College (CT), Kingsborough Community College (NY), LaGuardia Community College (NY), and Passaic County Community College (NJ). See Achieving the Dream, “Seven Community Colleges and Two National Organizations Join Forces to Aid Workforce in Distressed Northeast with \$23.5 Million,” news release, October 30, 2013. NRC received a \$23.5 M grant from the US Department of Labor to develop the program.
25. Terry Nguyen, “Reading, Writing, and Resilience,” *Chronicle of Higher Education*, February 26, 2019.
26. Agam Shah, “Universities Get Creative with Technology Due to Coronavirus Closures,” *Wall Street Journal*, April 3, 2020; “AACTE and Mursion Collaborate to Support Teacher Preparation through Coronavirus,” press release, May 7, 2020.
27. Personal communication (email) with Don Guckert, University of Iowa, May 15, 2020; personal communication (email) with Katie Grossmann, University of Iowa, May 18, 2020.
28. Sean R. Gallagher, *Educational Credentials Come of Age: A survey on the Use and Value of Educational Credentials in Hiring* (Boston: Northeastern University, Center for the Future of Higher Education and Talent Strategy, 2018).
29. Paul Fain, “Competition for Employer Tuition Benefits,” *Inside Higher Ed*, May 30, 2019.
30. Strada and Emsi, “The New Geography of Skills: Regional Skill Shapes for the New Learning Ecosystem,” December 2019.
31. Personal communication (Zoom) with Jennifer Thornton, Vice President of Programs, BHEF, May 14, 2020.

© 2020 Diana G. Oblinger. The text of this article is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.



Diana G. Oblinger is President Emeritus of EDUCAUSE.

# You’re advancing higher education.

## We’re here to help.

# EDUCAUSE

## Insights

## Conferences & Learning

## Community

UNCOMMON THINKING FOR THE COMMON GOOD

[educause.edu/discovermembership](https://educause.edu/discovermembership)



# Interface University

and Other Scenarios  
for the AI Economy

By **David Staley**

Illustrations by Mark Pernice





# In March 2016,

AlphaGo—a computer algorithm developed by Google’s DeepMind—defeated Lee Sedol, one of the world’s top Go players, 4 games to 1. The result was a worldwide sensation: twenty years after World Chess Champion Garry Kasparov was defeated by IBM’s parallel-processing computer Deep Blue and five years after IBM’s Watson easily beat the two best *Jeopardy* champions, artificial intelligence had once again seemingly surpassed human intelligence.

At the time of Kasparov’s defeat, many observers (myself included) wondered if a computer would ever defeat a human at Go.<sup>1</sup> Chess is a complex game, of course, but at its heart, it is a game of logic and calculation. Given a particular board configuration, a player need only calculate all the possible combinations of moves and decide the best path among those choices. Computers are particularly good at brute-force calculation of this type, and thus it seemed inevitable that as computational power grew exponentially, someone would eventually create a device that could calculate more combinations faster than a human might.

Go, however, is not a game that is easily given over to

brute-force calculation, and that is why so many of us thought it unlikely that a computer would defeat a human. Go, invented in China more than 2,500 years ago, is a deceptively simple game: on a board with a grid of black lines (usually 19x19), two players alternately place black and white stones on the intersections. Chains of like stones encircle territory, surrounded stones may be captured and removed from the board, and the player who encircles more territory is the winner. From these relatively simple rules, however, emerges a game of great beauty and complexity. Players do not calculate moves as much as they intuit patterns in the stones. Determining all possible moves would mean calculating as many variations as there are stars in the galaxy. Thus, human intuition and pattern recognition would always defeat computer calculation—or so went the conventional wisdom at the time.

Additionally troubling was how emphatic the victory was: 4 out of 5 games. In one game, AlphaGo made a particularly intriguing move. Observers were stunned by the ploy. The current European Go champion noted: “I’ve never seen a human play this move.

So beautiful.”<sup>2</sup> That an algorithm had defeated the best human player was surprising enough, but the fact that it was also capable of generating something no human had ever devised was stunning.

AlphaGo was programmed using machine learning techniques. Unlike Deep Blue, AlphaGo was programmed to learn via experience. It played thousands and thousands of games, each time being programmed to “learn” from the experience of playing. It has been said that to master any domain, one must practice for 10,000 hours.<sup>3</sup> With machine learning algorithms, however, computers are developing the ability to become masters.

## A World Without Work

What some find unsettling about AlphaGo’s victory is that it portends yet another instance of an intellectual skill that, previously considered unique to humans, is now being superseded by computer intelligence. Many people today are thus imagining and considering the implications of a “world without work” as algorithms perform cognitive tasks previously handled only by humans.<sup>4</sup> Meanwhile, a commonly stated purpose of higher education is to prepare young people for work, to fill positions in our complex global economy. But if predictions of a world without work come to pass, the link between higher education and job preparation will be torn apart.

As a result, higher education will become unnecessary for many. A small number of institutions of higher learning might remain, as places where students go to engage their



*In a world where so many skills have been automated by artificial intelligence, how can skills training remain the raison d’être of higher education?*

minds, but many colleges and universities will be shuttered if a central core of their mission has been eliminated. Higher education would return to its pre-Morrill Act status as a leisure activity for the few. Those seeking higher learning will do so without a specific goal—and certainly not with the need for employment at the end. In this scenario, higher education will exist only for those interested and curious enough to attain it. Others will seek out free, informal, nondegree learning sources such as TED talks and other online resources or visits to public libraries.

A 2019 survey by Northeastern University and Gallup suggests that a large number of people in the United States, the United Kingdom, and Canada do not believe that higher education, as currently designed, can adequately provide the skills training necessary for the new AI economy: “This lack of confidence in any one institution to plan for AI adoption provides a clear opportunity for higher education to take the lead in... developing new and more innovative ways to deliver skills training and education.”<sup>5</sup> But in a world where so many skills have been automated by artificial intelligence, how can skills training remain the *raison d’être* of higher education?

The “computers become more intelligent than humans” scenario is just one possible future. Indeed, this scenario will come to pass only if predictions about increasing computing speed are borne out. Many predictions for super-smart computers are based on extrapolating Moore’s Law into the



future. But if such continued exponential expansion is not physically possible, then computers, algorithms, and other digital devices might run up against limits on their processing speed and, thus, their intelligence. We still know so little about how our brains work and the basis of our own cognition and consciousness that we cannot yet hope to replicate that feat in our AI electronic brains. Algorithms will reach a “peak intelligence” beyond which they will not be able to surpass.

The implication here is that artificial intelligence will not reach a stage where it will supplant human intelligence in all areas. Artificial intelligence will be able to perform many cognitive tasks, even those that may replace some human labor (especially any cognitive tasks that are easily repeatable), but many intellectual abilities will remain exclusively “human.” Our capacity for wonder, for example, or our need for play or our empathy for others will define human intelligence in what Erik Brynjolfsson and Andrew McAfee call the “Second Machine Age.”<sup>6</sup>

In such a scenario, the purpose of higher education is to cultivate uniquely human attributes in students, not train them for (automatable) skills. Should artificial intelligence advance to the point that many human skills are rendered unnecessary, higher education can shift its focus to the cultivation of those attributes that cannot be mimicked by machines. Students would no longer arrive on campus to study accounting, engineering, or information technology, since these professions will have

been taken over by algorithms. Instead, students would arrive on campus to develop curiosity, creativity, imagination, play, wonder, and meaning-making: attributes that no algorithm has yet mastered. The author Daniel Pink has observed that such right-brain attributes would triumph in the Second Machine Age.<sup>7</sup>

In his 2017 book *Robot-Proof*, Northeastern University President Joseph Aoun wrote:

Other animals apply intelligence to solving problems. . . . But only human beings are able to create imaginary stories, invent works of art, and even construct carefully reasoned theories explaining perceived reality. . . . Creativity combined with mental flexibility has made us unique—and the most successful species on the planet. They will continue to be how we distinguish ourselves as individual actors in the economy. Whatever the field or profession, the most important work that human beings perform will be its creative work. That is why our education should teach us how to do it well.<sup>8</sup>

As the Second Machine Age arrives, higher education might do well to shift its curricular mission to focus on the cultivation of right-brain attributes.

#### **Cultivating an Interface**

Another very plausible scenario is that instead of competing against each other, humans and machines will work together to reach a cognition level that each entity alone cannot achieve. In 2005 Team ZackS, consisting

*Should artificial intelligence advance to the point that many human skills are rendered unnecessary, higher education can shift its focus to the cultivation of those attributes that cannot be mimicked by machines.*

of two amateur chess players (Steven Cramton and Zackary Stephen) and three computers, won the PAL/CSS Freestyle Chess Tournament<sup>9</sup> The tournament was based on freestyle chess, developed by Kasparov shortly after he lost to Deep Blue. Human players are permitted to use computers in teams that Kasparov described as “centaurs.” Cramton and Stephen were both rated as average players, and the computer program they were using was an off-the-shelf brand. Yet this “average” human/machine centaur beat some of the best humans and

best computers in the world. Less than a decade after Kasparov’s defeat by Deep Blue, humans and computers were working together to obtain results that neither could achieve alone.<sup>10</sup>

In a world where artificial intelligence carries out many cognitive tasks with greater efficiency than humans, human intelligence will also be necessary to complete many cognitive tasks. In other words, humans and algorithms working together prove more effective than either algorithms or humans alone.<sup>11</sup> *Wired* magazine’s transportation writer, Alex Davies, thus asks: “As increasingly intelligent machines come to life, how should they interact with humanity?”<sup>12</sup>

To prepare for such a future, we need to imagine a new kind of higher education institution, one where humans and artificial intelligences learn to think together. The mission of

“Interface University” would be the cultivation of the interface, or relationship, between human and artificial intelligences. Interface University would be based on the idea that machines cannot fully supplant human cognition and that thinking with machines allows students to engage in a level of cognition not possible with the brain alone. Thus, at Interface University, students would learn how to think together with computers.

This means more than simply giving students iPads during their first year. As noted above, the curriculum would be based on enhancing the quality of the interface between the computer and the individual brain. Students are ready to graduate when they have demonstrated this unified condition, this “state of interface.” The pedagogical and epistemological philosophy of Interface University is that the highest goal of education is

to achieve the kind of symbiosis between human and computer intelligences as exists between a horse and a rider.

Because so many cognitive skills—especially left-brain skills—can be carried out by artificial intelligence, students at Interface University would learn to develop right-brain attributes that cannot be mimicked by machines. Students would cultivate curiosity, creativity, imagination, play, meaning-making, and wonder—attributes no algorithm has mastered. Yet the computer would not be treated as a mere tool or even a junior partner at Interface University. It is seen instead as a “third hemisphere” of the brain, and higher learning would require developing a metaphorical *corpus callosum* with this third digital hemisphere.<sup>13</sup> The computer is a partner in creativity, in thinking, in cognition. When the state of interface

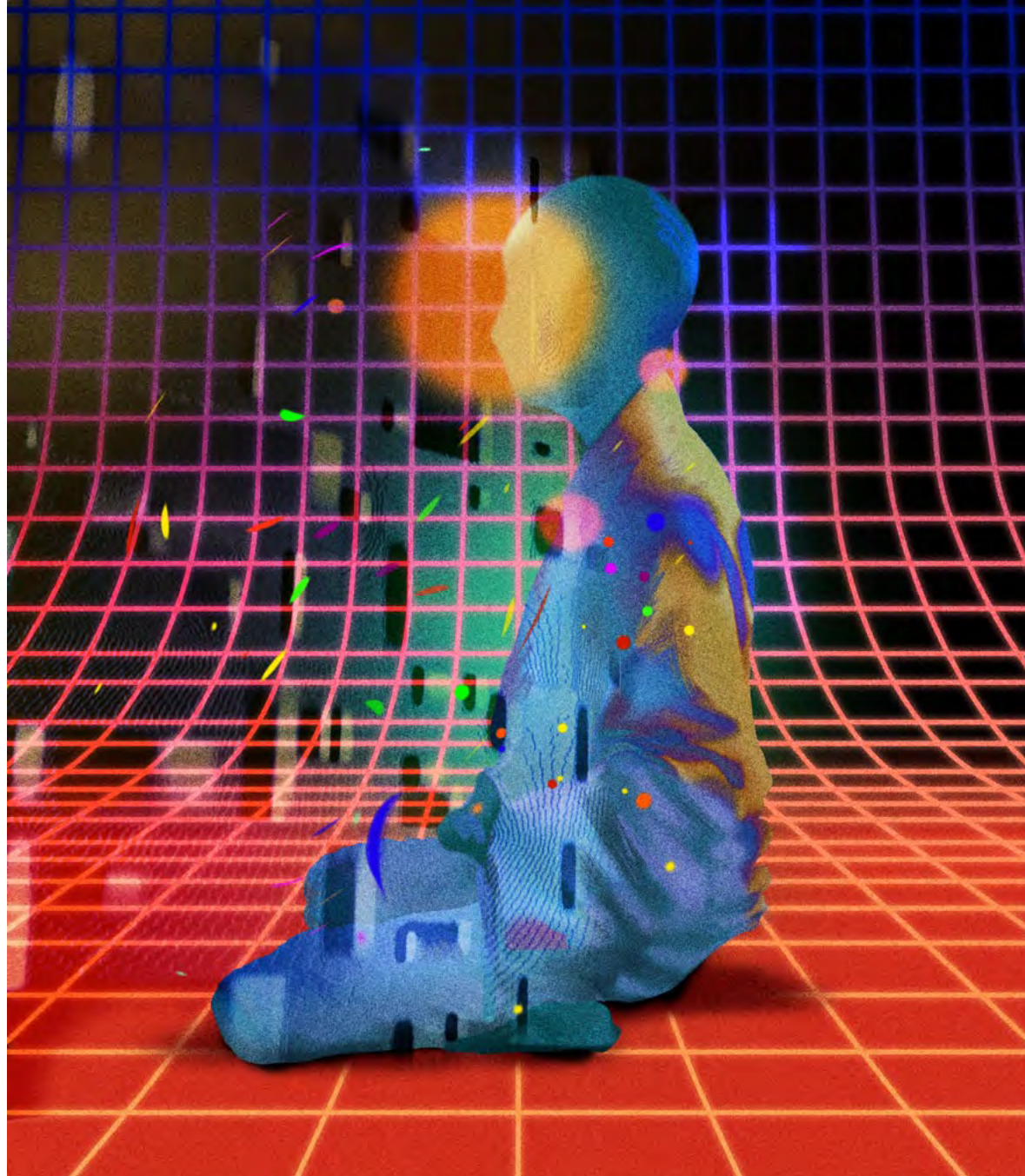
Finding the  
**right candidate**  
should be easy

EDUCAUSE

CAREER CENTER

[educause.edu/jobs](http://educause.edu/jobs)





*In the same way that we today converse with Siri or Alexa, students at Interface University would be constantly speaking with their third hemisphere, as they think, solve problems, make, research, and create together.*

architectural forms both from the manipulation of material objects and from suggested algorithms, with the architecture student “mentoring” the algorithm. Students in the digital humanities would use text-mining algorithms to “read” volumes of texts as a way to discern and interpret patterns that would have gone unobserved without the algorithms. Thus, students would achieve a degree in a subject/discipline, but their understanding would be enhanced by these augmented thinking skills.

Student assessment would be based on projects. Indeed, the acquisition of knowledge/information would not even be tested at Interface University. Because so much information is accessible via networked knowledge bases, the idea of standardized tests of knowledge would make little sense. Interface University would educate students to develop

their own questions and to construct the cognitive tools they can use to answer those questions. “Know-how” would be valued more than “know-what.” In each class, with every encounter within the disciplines, students would be evaluated on the insights gained from the AI/human interface.

Students would also learn the history, philosophy, and ethics of interface as part of their education. They would examine the basis of human cognition, with “thinking about thinking” as a central feature of this education. A consideration of the nature of cognition (human and machine, human+machine) would form an important part of the general education curriculum. Students would learn that even though algorithms can sift through data and uncover patterns, humans interpret and make sense of those patterns. Interface University would

has been achieved, the artificial intellect serves as a muse, a source of inspiration, for the human student.

Learning would become a noisy affair, with humans and artificial intelligence engaged in continual conversations. In the same way that we today converse with Siri or Alexa, students at Interface University would be constantly speaking with their third hemisphere, as they think, solve problems, make, research, and create together. Education thus involves learning how to engage

in a conversation with artificial intelligence. Some artificial intelligence would be tethered to a robotic “body,” providing a physical presence of artificial intelligence at Interface University. Another part of the educational mission would be teaching students how to navigate and mediate this social interaction between artificially embodied intelligence and human intelligence.

Students would major in individual disciplines, and faculty would engage in research in those disciplines—which

would be similar to those at today’s colleges and universities. But at the same time, the kinds of questions addressed and the nature of the research conducted in those disciplines would be different from the questions and research of today. Competency in each discipline would be demonstrated by the results generated via human/algorithm cooperation. The form and appearance of artificial intelligence would differ from department to department. For example, students would develop new

Finding the  
**right job**  
should be easy

EDUCAUSE

CAREER CENTER

[educause.edu/jobs](https://educause.edu/jobs)



redefine and reconfigure what we mean by human cognition.

This education would also involve understanding the limitations of artificial intelligence. Students would learn about human decision-making and about when it is appropriate and ethical for humans alone to make decisions. Students at Interface University would know when the artificial intelligence is “wrong.” In turn, as part of the university’s curricular mission, both students and faculty would guide artificial intelligence in the ethics and morality of decision-making.<sup>14</sup>

### Better Together

Philosophers have identified the current times as the age of the “post-human.” As Mark C. Taylor, professor of religion at Columbia University, once described himself: “I am plugged into other objects and subjects in such a way that I become myself in and through them, even as they become themselves in and through me.”<sup>15</sup> Meanwhile the technology/feminist scholar Donna Haraway wrote in 1985: “We are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs.”<sup>16</sup> The mission of Interface University would be to educate post-humans.

Education has always involved, to some degree, learning how to develop an interface with our cognitive prostheses, specifically with books. Interface University would be based on a similar intimacy with cognitive technologies. Such an interface assures students that they cannot be replaced by computers and other machines

*The more likely future is one in which humans and artificial intelligence work in tandem to engage in cognition, in a division of labor between what artificial intelligence does better and what humans do better.*

and that they are in fact better together with these machines.

The computer scientist Edward Ashford Lee maintains that we are today witnessing “the emergence of symbiotic coevolution” between humans and artificial intelligence, “where the complementarity between humans and machines dominates over their competition.” When we consider symbiotic species in nature, we do not assume that one dominates the other or that one will kill off the other. Lee believes a similar sort of cognitive cooperation is forming between humans and machines: “Stronger connections and interdependencies between man and machine could create a more robust ecosystem.” He continues: “To understand that complementarity” between human and artificial intelligence, “we have to understand the fundamental strengths and limitations of both partners. Software is restricted to a formal, discrete, and algorithmic world. Humans connect to that world through the notion of semantics, where we assign meaning to bits.”<sup>17</sup>

### Conclusion

It is indeed possible that artificial intelligence will advance to such a degree that it achieves “general intelligence.” Should that day arrive, it is likely that artificial intelligence will have taken over most jobs.<sup>18</sup> In such a scenario, the nature and purpose of higher education will have irrevocably changed: higher education will have reverted to its pre-Morrill condition as a luxury, perhaps even a luxury for the many. But in such a scenario, college for human capital development—the guiding logic of higher education since the 1980s—would no longer be the rationale.

This is the less plausible scenario, however. Instead, artificial intelligence most probably will have reached the stage of development where it is replacing many human tasks, even complex cognitive tasks—but not every human task. The more likely future is one in which humans and artificial intelligence work in tandem to engage in cognition, in a division of labor between what artificial intelligence does better and what

humans do better. Learning to cooperate, learning to think together, will become the *raison d’être* of higher education. ■

### Notes

1. David J. Staley, “Digital Historiography: Kasparov vs. Deep Blue,” *Journal of the Association for History and Computing* 3, no. 2 (August 2000).
2. Fan Hui quoted in Christopher Moyer, “How Google’s AlphaGo Beat a Go World Champion,” *The Atlantic*, March 28, 2016.
3. Malcolm Gladwell, “Complexity and the Ten-Thousand-Hour Rule,” *New Yorker*, August 21, 2013.
4. See Derek Thompson, “A World Without Work,” *The Atlantic*, July/August 2015; Jerry Kaplan, *Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence* (New Haven: Yale University Press, 2015).
5. Northeastern University and Gallup, *Facing the Future: U.S., U.K. and Canadian Citizens Call for a Unified Skills Strategy for the AI Age* (Washington, DC: Gallup, 2019), p. 7.
6. Erik Brynjolfsson and Andrew McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (New York: W. W. Norton & Company, 2014). See also Tyler Cowen, *Average Is Over: Powering America Beyond the Age of the Great Stagnation* (New York: Dutton, 2013).
7. Daniel H. Pink, *A Whole New Mind: Moving from the Information Age to the Conceptual Age* (New York: Riverhead Books, 2005).
8. Joseph E. Aoun, *Robot-Proof:*

*Higher Education in the Age of Artificial Intelligence* (Cambridge: MIT Press, 2017), p. 21.

9. Clive Thompson, *Smarter Than You Think* (New York: Penguin Press, 2013), 4.
10. See Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins* (New York: Public Affairs, 2017).
11. Linda Baer, Amanda Hagman, and David Kil, “Preventing a Winter of Disillusionment: Artificial Intelligence and Human Intelligence in Student Success,” *EDUCAUSE Review* 55, no. 1 (2020); Thomas E. Miller and Melissa Irvin, “Using Artificial Intelligence with Human Intelligence for Student Success,” *EDUCAUSE Review*, December 9, 2019.
12. Alex Davies, “Audi’s New A8 Shows How Robocars Can Work with Humans,” *Wired*, July 11, 2017.
13. On the idea of a *corpus callosum* being developed between brain and machine, see Michael Chorost, *World Wide Mind: The Coming*
14. Good AI, “School for AI” (website), accessed June 15, 2020; Simon Parkin, “Teaching Robots Right from Wrong,” *The Economist* 1843 (June/July 2017).
15. Mark C. Taylor, *The Moment of Complexity: Emerging Network Culture* (Chicago: University of Chicago Press, 2003), p. 231.
16. Donna Haraway, “A Cyborg Manifesto,” *Socialist Review*, 1985, reprinted in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), p. 150.
17. Edward Ashford Lee, *Plato and the Nerd: The Creative Partnership of Humans and Technology* (Cambridge: MIT Press, 2017), pp. x, 185–86.
18. See Aaron Bastani, *Fully Automated Luxury Communism* (London: Verso, 2019).

© 2020 John Hopkins University Press

This article is adapted from David J. Staley, *Alternative Universities: Speculative Design for Innovation in Higher Education*, pp. 121–140. © 2019 Johns Hopkins University Press. Reprinted with permission of Johns Hopkins University Press.



**David Staley** is Director of the Humanities Institute at The Ohio State University. He is an associate professor in the Department of History—where he teaches courses in digital history and historical methods—and holds courtesy appointments in the Department of Design and the Department of Educational Studies.

Finding the  
**right career match**  
should be easy

EDUCAUSE

CAREER CENTER

[educause.edu/jobs](https://educause.edu/jobs)



# THE POST-PANDEMIC EVOLUTION OF STUDENT DATA PRIVACY

By Merritt Neale and Matthew Tryniecki



MIRAGE/GETTY IMAGES



# 1789.56 DATA 21.4872519 IS 37210.98 THE 54 LIFE BLOOD

of any higher education institution's strategic planning activities, providing both evidence of success and justification for new initiatives. In response to the COVID-19 pandemic, colleges and universities are leaning heavily on new tools and remote methods for collecting various datapoints about their stakeholders. This wealth of data is a double-edged sword: on the one side are the data applications that improve the student experience; on the other side is the potential for unethical, ill-advised, or even unlawful use of personally identifiable information (PII).

In a 2020 EDUCAUSE study (published before the COVID-19 outbreak), higher education leaders identified *Privacy* as their second most-critical IT issue, with related concerns around *Information Security Strategy* and *Digital Integrations* coming in at #1 and #4, respectively.<sup>1</sup> As higher education moved to fully remote delivery with the onset of the pandemic, and as delivery for the fall 2020 semester is projected to be fully or partially remote for many institutions, the critical importance of maintaining strong data privacy and governance policies and protocols has only increased. Even when in-person instruction and activities resume, online delivery and the associated new tools and data sets will remain important.

## Post-Pandemic Privacy Legislation

To create formal privacy guidelines for educational institutions, the US federal government passed the Family Educational Rights and Privacy Act (FERPA) in 1974. But in today's climate, most experts agree that it is outdated and must be revamped to align with a constantly evolving industry.

Since 2013, forty-one states have enacted more than 120 supplemental laws.<sup>2</sup> But even these legislative advancements struggle to

keep pace with the current rate of technological innovation, driven by rising adoption rates of artificial intelligence and data analytics tools that often render potentially successful information privacy strategies null and void before they can ever be executed.

In the wake of the European Union's rollout of the General Data Protection Regulation (GDPR) in 2018, speculation emerged over whether the United States would implement similar guidelines. Then, in March 2020, new legislation titled the "Consumer Data Privacy and Security Act of 2020" was introduced by the US Senate. Similar to the GDPR and to the California Consumer Privacy Act (CCPA), this legislation calls for establishing the role of a privacy officer, requires comprehensive data security programs, mandates notice and consent, and includes financial penalties for noncompliance. If passed, it would be administered by the Federal Trade Commission (FTC) and would also preempt state law.

Beyond a federal privacy law, colleges and universities may also be required to comply with other statutes post-pandemic. Special Publication (SP) 800-171, issued by the US National Institute of Standards and Technology (NIST), offers security controls for research agencies to protect "Controlled Unclassified Information (CUI) in nonfederal systems and organizations."<sup>3</sup> While this currently applies only to US Department of Defense contracts, the US Department of Education has strongly encouraged institutions to follow the publication's guidelines in their handling of student information, leading many experts to predict that the rule will soon be expanded to include non-research data.

In a post-pandemic higher education environment, sustainability will depend on leaders' ability to stay abreast of—and respond appropriately to—the latest changes to state and federal legislation on data security. For example, according to interpretations of the recent guidelines around COVID-19 communications released by the US Department of Education, written permission from students or guardians must be obtained before institutions are legally able to share PII. At the same time, during an emergency, FERPA allows institutions to disclose relevant information about individual students (without prior written consent) to "appropriate parties" (i.e., health departments but not the news media) to protect the health and safety of the community.<sup>4</sup> Colleges and universities should strive to maintain student anonymity whenever possible, highlighting only the information necessary to inform students, staff, faculty, and other stakeholders of an imminent threat to public safety.

**Shadow IT, smart campuses, the internet of things, and further proliferation of third-party systems pose new questions at the intersection of privacy, civil liberties, ethics, ownership, and autonomy.**

Looking forward, leaders should also consider how best to translate these and future updates to their institutional policies and how best to communicate these amendments to current and future students.

## Ed Tech and Big Tech

Over the last decade, the trend toward technology-enabled "smart" campuses has brought with it heightened scrutiny around the appropriate use of student data. Myriad technologies, including students' smart phones, can be used to track everything—from their class attendance and academic performance to their mental and physical health.<sup>5</sup>

The increasingly common partnerships between higher education and third-party vendors and big technology brands (e.g., Amazon, Facebook, Google) further complicate the matter. The involvement of these companies exposes institutions to public scrutiny, fueled by several recent, high-profile violations as well as ambiguity in terms of who is responsible for what might happen to harvested data.<sup>6</sup>

Shadow IT, smart campuses, the internet of things, and further proliferation of third-party systems pose new questions at the intersection of privacy, civil liberties, ethics, ownership, and autonomy. Take, for example, the public outcry over Facebook's sale of data to Cambridge Analytica, a political consulting firm that allegedly used the information to target US voters in the 2016 presidential election.<sup>7</sup> The blowback from this scandal has caused leaders in nearly every industry to pause and consider the ethical implications of data collection and its potential uses.

Virtual privacy concerns are not new in higher education, of course. Over the past decade, as most institutions have shifted their delivery models to enable at least some forms of remote learning, corresponding privacy challenges have been uncovered. Yet due to the COVID-19 pandemic, most institutions have had to quickly shift to a completely remote delivery model, which has exacerbated these issues, leaving technology and privacy leaders without the time, support, or resources





to complete their due diligence with respect to third-party vendors. In addition, the US government is considering using technology platforms (e.g., Google, Facebook, mobile devices) to track the health status of its citizens during the pandemic, and continued remote learning is necessitating an increased use of online vendors (e.g., Zoom, online proctoring companies)—nuances that have the potential to expose colleges and universities to intense public scrutiny about how the data collected from virtual interactions will be used.<sup>8</sup>

Leaders in higher education should be mindful of how these types of third-party platforms are leveraged and should take the initiative to educate students, faculty, and staff on what is being collected and how it may be utilized.

#### Gray Data

Although there is an abundance of ethically neutral or potentially positive uses of students' personal information, there are at least as many questionable, or "gray," areas not covered by current legislation. In these instances, higher education leaders are forced to make difficult decisions.

In an article in the Berkeley Technology Law Journal, Christine L. Borgman, an information studies professor at the University of California Los Angeles (UCLA), described "gray data" as the data that is collected by colleges and universities about members of their community as part of their daily operations but that falls outside the realm of research. Some data may still be formally regulated or governed, but the challenge is that it often is not.<sup>9</sup>

For instance, consider the myriad data collection points encountered by college or university students on an average day. Getting home late from a night out, a student may use a campus ID card to enter her dorm. The next morning, feeling pangs of hunger, she uses her dining-plan card to pay for breakfast at the cafeteria. Later, she reserves a conference room for an organic chemistry study group session that afternoon. After classes are over, she heads to the soccer field, where the performance is tracked by an athlete data management system. And

**Given the implications of the COVID-19 pandemic, these ambiguous privacy concerns have been exponentially multiplied as leaders weigh public safety and institutional survival against student privacy and security.**

at each stop throughout the day, automated license plate reader (APLR) technology tracks where her vehicle is parked. Multiply these interactions by thousands of students, and one gets a clearer picture of the sheer amount of daily data being collected by higher education institutions.

Given the implications of the COVID-19 pandemic, these ambiguous privacy concerns have been exponentially multiplied as leaders weigh public safety and institutional survival against student privacy and security. Although the data collected can be helpful when developing a student success strategy, it can also be potentially problematic given the implications of tracking individual students' activities across devices, regardless of whether they are on campus or elsewhere.

Gray data challenges can even impact students' post-graduation prospects. Consider the difficult position of an athletic administrator who knows about a promising student-athlete's history of serious head injuries and must determine whether to share this information with professional league recruiters.

The use of gray data, especially data collected virtually, may conflict with campus privacy standards and the concept of reasonable expectations of privacy (which in itself is loosely defined). Yet the current trend toward online delivery

and the associated data collection presents a number of potential concerns for both instructors and students. With little-to-no formal guidance on such scenarios, institutional leaders are often left to determine the ethical path forward on their own.

#### Building the Infrastructure for Data Governance

To ensure that student data privacy remains an institutional priority during and beyond the current pandemic, higher education leaders should confirm that standards, policies, and guidelines are collaboratively developed by a diverse and representative group of stakeholders with broad expertise in student privacy and data protection. This collaboration needs to occur within a well-defined governance structure, with clear roles and responsibilities and defined outcomes.

To that end, over the last few years, colleges and universities have increasingly established the role of chief privacy officer (CPO) and campus-wide privacy governance boards. Leadership from these individuals has never been more critical.



### Chief Privacy Officers

Previously, CPOs were often relegated to a back-office role on the information security team, but today's effective leaders are becoming visible campus ambassadors, building positive working relationships with diverse stakeholders across all areas of their institutions. During times of crisis like the current pandemic, it is vital to have accessible leaders on the front lines, leading the charge to address urgent needs while strategically positioning the institution for success in an uncertain future.

When a CPO is allowed to have a more visible presence, engaging the campus community and the public at large in a dynamic conversation about privacy, a strong information privacy culture can be built (even in the face of significant challenges). Yet to be truly successful, these administrators need the tools and support to create practical guidelines and policies that can translate into daily practices and procedures relevant in this "new normal."

Even in the most difficult situations, CPOs should not be the sole arbiters of an institutional privacy policy. They must be willing and able to leverage the knowledge of other internal and external experts to help them make informed and educated decisions. At the same time, they must demonstrate exceptional communication skills and organizational awareness in order to be viewed as a valuable, accessible resource for stakeholders across the institution.

Especially in light of financial constraints brought about by the current recession, institutions may consider enhancing existing IT leaders' scopes of responsibilities to cover this need for privacy governance (rather than hiring for a new senior-level position). For colleges and universities undergoing a hiring freeze, this presents an opportunity to both grow promising leaders' skills and leverage existing talent.

### Privacy Governance Boards

During a crisis as unprecedented as the COVID-19 pandemic, there are bound to be multiple instances of unusual ethical questions and ambiguous circumstances that will require steadfast leadership, institutional agility, and strategic thinking.

With the goal of promoting a balance of perspectives from across the institution, formal privacy governance boards are essential to the ethical review and adjudication of complex information and data management matters. These committees are typically composed of a mix of knowledgeable faculty and

**Forward-thinking colleges and universities will embrace this new frontier in higher education by building a robust infrastructure to support ethical data usage, privacy education, and innovation.**

administrators, while some integrate students as well. For example, UCLA has its Board on Privacy and Data Protection, whereas the University of Chicago looks to its Data Stewardship Council for guidance. Post-pandemic, these boards will also be essential in creating (or optimizing) and regularly reviewing a crisis response strategy as part of the regular business continuity planning conducted by the institution.

In combination with the privacy office, these boards can help demystify student privacy and data protection concerns inherent in the daily operations of colleges and universities. Further, they can help shape new policies and procedures in response to emerging threats.

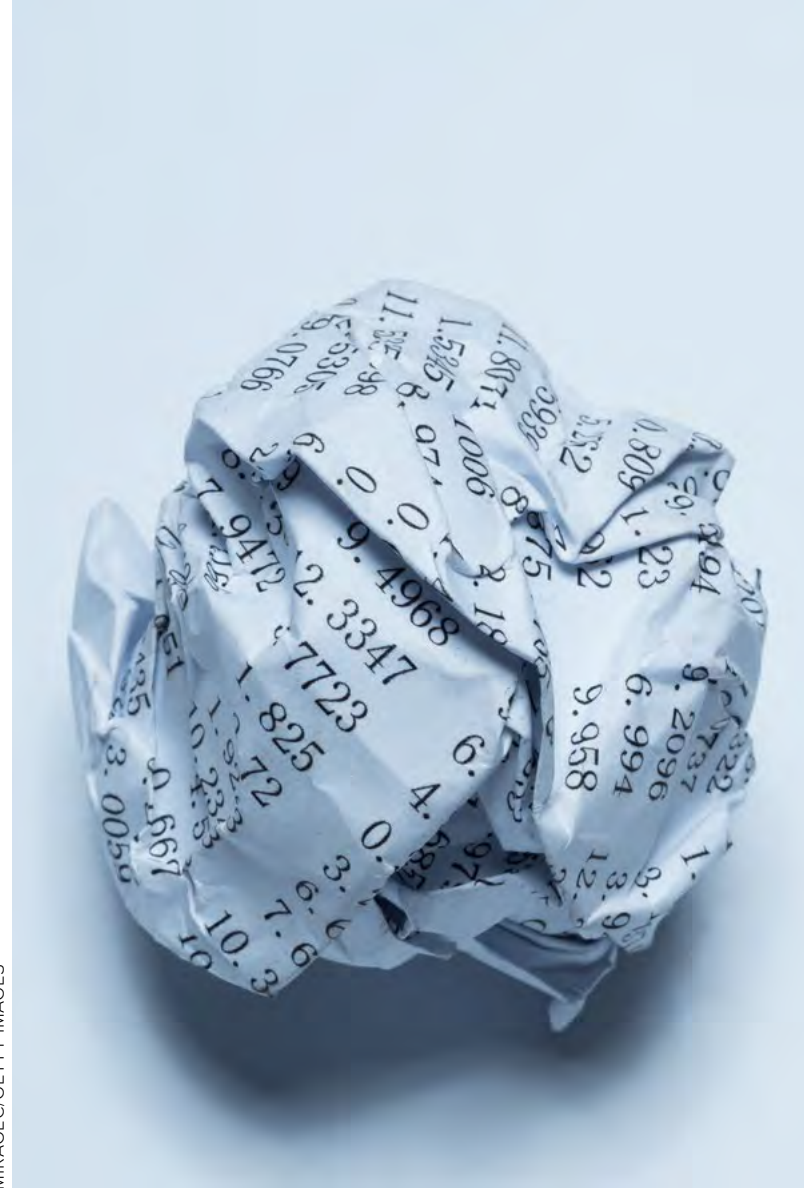
### The Post-Pandemic Future of Student Privacy

In a post-pandemic future, higher education leaders will continue to grapple with previously unheard-of challenges and gray areas regarding student privacy. In addition, there will likely be a surge in state legislation—with California's Consumer Privacy Act leading the way—as well as increased rigor around enforcing existing federal laws like FERPA, the Health Insurance Portability and Accountability Act (HIPAA), and Europe's GDPR.

Today, most institutions are just beginning to invest in the resources required to respond effectively to these developments. Privacy offices, while increasingly common in higher education, are still relatively rare. And those that are in place are often understaffed and mired in everyday activities, including breach response, contract reviews, and compliance functions.

Likewise, data governance boards are increasing in number, yet many still struggle to make a significant impact on institutional policies. Driving consensus across a wide range of stakeholder groups is a difficult task, often pitting faculty against administration, but leaders have a moral, ethical, and professional responsibility to find common ground for the greater good of the institution.

MIRAGEC/GETTY IMAGES



Forward-thinking colleges and universities will embrace this new frontier in higher education by building a robust infrastructure to support ethical data usage, privacy education, and innovation. Some actions that leaders can take today to future-proof their institutions against another global emergency include the following:

- Recruiting and/or increasing support for an experienced, qualified chief privacy officer
- Creating or optimizing an institutional data privacy board
- Proactively evaluating third-party vendors as online delivery partners
- Creating and regularly reviewing an institutional crisis response plan
- Assessing institutional data storage and classifications to ensure that privacy protections are optimized
- Communicating with students about updates to privacy policies and simplification of opt-out procedures
- Becoming familiar existing laws (e.g., HIPAA, FERPA, GDPR, CCPA)
- Calculating potential risks related to data privacy to help prioritize institutional opportunities for improvement

- Clearly defining ownership for key privacy areas to ensure role clarity and effective execution

As colleges and universities seek to recover from the financial, operational, and strategic challenges presented by the COVID-19 pandemic, leaders will be called to juggle numerous high-impact priorities. They may thus be tempted to put privacy matters on the back burner in order to address more urgent demands. Instead, by optimizing infrastructures today, institutional leaders can navigate the operational challenges of COVID-19 and future crises while maintaining a strong commitment to privacy. ■

### Notes

1. Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel, "Top 10 IT Issues, 2020: The Drive to Digital Transformation Begins," *EDUCAUSE Review* Special Report, January 27, 2020.
2. "State Student Privacy Laws," Student Privacy Compass (website), accessed June 25, 2020.
3. Ron Ross et al., "Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations," NIST, December 2016 (updated June, 7, 2018).
4. Student Privacy Policy Office, US Department of Education, "FERPA & Coronavirus Disease 2019 (COVID-19), FAQs," March 2020.
5. Drew Harwell, "Colleges Are Turning Students' Phones into Surveillance Machines," *Washington Post*, December 24, 2019.
6. Nicholas Confessore, "Cambridge Analytica and Facebook: The Scandal and the Fallout So Far," *New York Times*, April 4, 2018.
7. Issie Lapowsky, "How Cambridge Analytica Sparked the Great Privacy Awakening," *Wired*, March 17, 2019.
8. Tony Romm, Elizabeth Dwoskin, and Craig Timberg, "U.S. Government, Tech Industry Discussing Ways to Use Smartphone Location Data to Combat Coronavirus," *Washington Post*, March 17, 2020; Drew Harwell, "Mass School Closures in the Wake of the Coronavirus Are Driving a New Wave of Student Surveillance," *Washington Post*, April 1, 2020.
9. Christine L. Borgman, "Open Data, Grey Data, and Stewardship: Universities at the Privacy Frontier," *Berkeley Technology Law Journal* 33, no. 2 (October 2018).

© 2020 Huron Consulting Group



Merritt Neale is Senior Director, Higher Education IT Strategy, at Huron Consulting Group.



Matthew Tryniecki is Manager, Higher Education IT Strategy, at Huron Consulting Group.





# From a Roadblock to the Path Forward: Improving the FAFSA Process

**W**hen it comes to attending a college or university, the first question a prospective student will likely have is how to pay for it. But while the affordability issue dominates the narrative, what is not often talked about is

how much “free” money is being left on the table every year. For example, infographic produced by the National College Attainment Network in 2017 indicated that only 31 percent of low-income high school seniors enrolled in college with a Pell Grant.<sup>1</sup> These statistics are pre-COVID-19, and early indications suggest that even more students will not participate in the Pell pool next year.

Community colleges and their students tend to suffer the most when it comes to financial aid, despite two-year colleges often being the most affordable option. Community colleges typically lack the resources needed to help guide students in financial wellness, thanks in large part to limited budget and resources. Budget cuts from COVID-19 will only worsen this situation.

As of May 6, 2020, renewals of the Free Application for Federal Student Aid (FAFSA®) were down 5% (more than 350,000 students) compared with the same date in 2019.<sup>2</sup> Fewer applications are a harbinger for many things, but one certainty is that fewer students will be able to afford higher education. This trend will be further compounded by massive job losses and the general unpredictability surrounding the future of work in the post-pandemic economy.

The need for financial aid is paramount as students once again question the affordability aspect of higher education amid COVID-19. How can we make financial aid and the FAFSA® more accessible to the students who need it most, especially those attending community colleges?

## FAFSA® Completion and Student Success

Put simply, when students do not complete the FAFSA®, they often do not attend college. That is what makes engaging students with a simple financial aid process essential to student success. But this is much easier said than done.

The current FAFSA® process is time-consuming and complicated. Students are faced with confusing language and a lack of

resources to provide them direction. When FAFSA® completion rates are an indicator of college/university enrollment and postsecondary access and success, not completing the application presents a significant loss for the students themselves.

In 2019, over 1.2 million students missed out on billions of unclaimed aid and access to affordable education. Approximately 645,000 of those students were eligible for Pell Grants, meaning they could have received money for their education but did not, often due to limited access to counselors or mentors who could

help them understand FAFSA®. And although students who attend community colleges are less likely to accrue large student loan debt, they are more likely to default on those student loans, making aid such as grants and scholarships essential.<sup>3</sup>

Without financial aid, many community college students are faced with an enormous financial burden, especially considering that most of them work and go to school or have family commitments at the same time. A recent study by EducationData.org showed that nearly 54 percent of students who drop out say they had difficulties balancing work and school, while 38 percent of students cite financial pressure as the reason they dropped out.<sup>4</sup> These statistics make it clear that money and financial aid are the root of the problem for many students who leave behind their higher education dream.

Since community colleges primarily cater to the demographic of students facing these obstacles every day, dropout rates and lack of completed applications can be detrimental to these institutions.

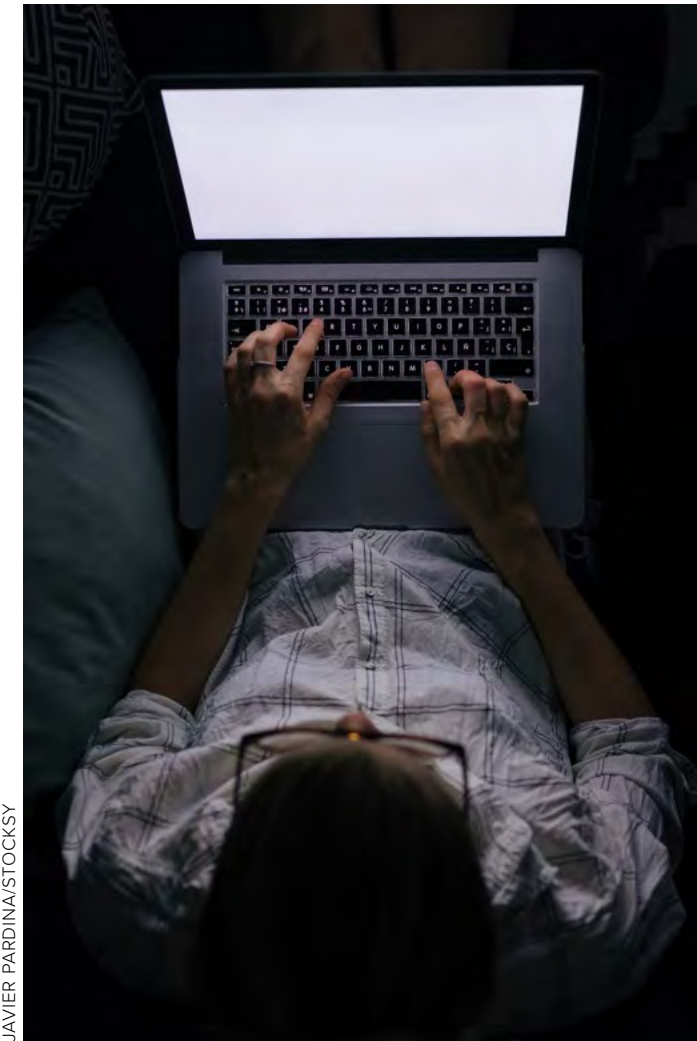
## A Student-Centric Approach

Between 2010 and 2014, enrollment at community colleges declined from 29 percent to 25 percent for full-time undergraduate students. With this trend, along with the need to improve degree-completion rates, it is no surprise that two-year colleges are suffering. Without a structure in place to help students get the financial support they need to complete their education, enrollment rates are likely to continue to decline.<sup>5</sup>

This is just one of the reasons I started Frank in 2017, with the overall goal of making higher education more accessible and affordable for students. Since then, the Frank team has launched three products aimed at guiding students through the financial aid process: a simplified version of the FAFSA®, an aid appeal service, and the Frank Membership, which offers

**The unhappy reality is that for many students, financial aid is the obstacle that keeps them from accessing higher education.**

**An antiquated process stands in the way, leaving them to take on massive debt or abandon their goal altogether.**



JAVIER PARDINA/STOCKSY

a financial aid advance for students waiting for a refund from their institutions.

At Frank, the team engages in a student-centric approach to solve these problems. To date, Frank has helped over 350,000 students access \$7 billion in financial aid. This was done by building a quick, easy-to-understand application that guides students through each step of the application. More importantly, the Frank team can see what trips up students and where they drop off, and it can reach out to them to get to the bottom of the issue before they abandon the process.

Important to improving application completion rates is knowing where a student is in the FAFSA® process, but most institutions do not have that insight. Today, on average, independent students complete Frank’s easy FAFSA® in less than 5 minutes. Of students who complete their FAFSA® with Frank, over 94 percent do so within 24 hours of creating an account. An additional 4 percent of completions occur within a week of creating an account.

Frank’s goal is to remove the doubt and uncertainty that play a role in a student’s decision-making process. We want them to know the importance of completing the FAFSA®, understand how the financial aid process works, and get the aid they deserve

to finish their education. Being able to help students identify and overcome obstacles allows us to do just that.

For example, Frank’s technology has been used to help students at local New York City community colleges, including LaGuardia. The Frank team went onsite to educate students about the FAFSA® and showcase how simple the process can be when they apply through Frank. One of our biggest takeaways from the work with LaGuardia Community College was how much administrators appreciated having an independent resource that would help advocate for their students, especially when every student has unique needs. Community colleges may lack systems that collect and analyze data, causing difficulties in understanding where their students need help.

Frank’s “white glove” treatment, which offers support through text, chat, and email support, has helped increase FAFSA® completion rates by 20 percent, which thereby helps more students enroll. The more students who complete the FAFSA®, the more likely they are to earn a degree, creating a win-win for students and colleges/universities.

## Moving Forward

The unhappy reality is that for many students, financial aid is the obstacle that keeps them from accessing higher education. An antiquated process stands in the way, leaving them to take on massive debt or abandon their goal altogether. At the same time, FAFSA® is not an intuitive process for colleges and universities. Institutions have access to information only after the application has been processed by the government, making it difficult for administrators to assist their students.

This is where Frank bridges the gap. Creating a simpler financial system for students and a smarter process for colleges and universities, Frank solves both challenges at once. A student’s likelihood of academic success and an institution’s likelihood of continued enrollment both increase.

COVID-19 has imposed harsh economic realities on all individuals and industries, especially higher education institutions. But despite the many changes and challenges we will confront after the pandemic, students and institutions will both benefit from an improved FAFSA® process. With more students looking for affordable options, now is the perfect time to remove the financial aid roadblock and take the path forward. ■

## Notes

1. Bill DeBaun, “The Leaky FAFSA Pipeline,” National College Attainment Network, December 14, 2017.
2. Bill DeBaun, “Nearly 250,000 Fewer Low-Income FAFSA Renewals This Cycle Nationally,” National College Attainment Network, May 6, 2020.
3. Autumn Haite, “Frank Finds 1.2 Million Students Missed Out on Billions in Unclaimed Aid in 2018,” *To Be Frank* (blog), September 24, 2019; Jennifer Ma and Sandy Baum, “Trends in Community Colleges: Enrollment, Prices, Student Debt, and Completion,” College Board Research Brief, April 2016.
4. Jaleesa Bustamante, “College Dropout Rates,” EducationData.org (website), November 6, 2019.
5. Ma and Baum, “Trends in Community Colleges.”

Charlie Javice is the Founder and CEO of Frank.

© 2020 Charlie Javice





# Collections as Platform: Synthesizing Content, Computation, and Capacity

**As research is increasingly mediated through code and computation, library collections and services must be positioned as infrastructure that is no longer defined by physical, intellectual, or even directly human-oriented pursuits but, rather, extends into virtual, digital, and even machine learning and AI research modes.**

**T**he traditional scholarship products that libraries manage are now primarily in digital form. At the same time, libraries are adding support for outputs including data, thus providing new opportunities for scholars to engage with large, multifaceted, digital aggregations of content through software tools. Synthesizing content, computation, and capacity requires the development of infrastructure to enable the application of tools (including text-mining, computational analysis, machine learning, data publication, and data computation) to library collections. Such computational functionality across digital collections enables researchers to explore new capabilities and formulate new inquiries through fundamental changes in the ways scholars work—changes that increase the importance and vitality of collections across the research process.<sup>1</sup>

Libraries need to conduct the selection and acquisition of information resources in explicit combination with decisions regarding the analytical tools and capacities to support the computational use of those resources in today’s research environment. The combination of content and computation makes the library collection a platform for exploring a host of additional research questions and applications. The benefits of networked, digital collections as a platform require investments in computational tools and access, the synthesis of content with technical and expert capacities, and the development of new campus partnerships. Well-established models for funding, acquiring, and “owning” collections become more complex. Partnerships within and between institutions must be sustained to enable the funding and scale required for computational collections.

## Licensing, Infrastructure, and Partnerships

Unfortunately, the trend toward digital in library collections, accompanied as it was by the rise of the license, brought with it the side effect of closing off collections from computational analysis. Contracts

were signed with only human readers in mind but were rarely renegotiated, even as computational research increased dramatically over the past decade.

Research libraries, in general, have significant catching up to do:

- On the vendor and contract end, libraries need to negotiate clear, full, and reasonably unfettered access to proprietary and limited-use data for researchers who need content as data.
- On the research side, libraries need to forge and reestablish relationships with computationally intensive research teams and units that understandably have come to see the academic library as irrelevant to their work.

Libraries are a critical part of the research infrastructure within higher education and are anchors of their respective institutions. Libraries provide the content that constitutes the intellectual foundation of research across all fields, and library services (from discovery to consultation to publishing support) ensure that this content—as well as researchers’ new content that grows and builds upon it—can effectively and efficiently be disseminated to wider publics. As research is increasingly mediated through code and computation, library collections and services must be positioned as infrastructure that is no longer defined by physical, intellectual, or even directly human-oriented pursuits but, rather, extends into virtual, digital, and even machine learning and AI research modes.

Partnerships across institutions must also reflect the already present reality of computational research. On campuses, the library cannot be the sole provider of computational research data, software, hardware, or support. Rather, the library must provide these in coordination, concert, and collaboration with offices of research and information technology, research labs and centers, and other units. Libraries will need new partners beyond their individual campuses and the usual library organizations and consortia. Research libraries will need to rely on government, industry, and scholarly associations, among others.

## Integrating Computational Collections and Capacity

To fully realize the potential of computational collections as part of a collections and research engagement program, libraries require significant financial, technical, and human resources:

- The costs of providing *access* to collections that are optimized for computational research include licensing and purchasing existing data sets, creating data sets for use by researchers, and funding open access, which might support content mining.
- The costs of providing *infrastructure* to support computational research across collections include the purchase and licensing of software for analysis, systems to support discovery of these data sets, and platforms that support analysis and storage.
- The costs of providing *expertise* to support computational research include training, retention, and potential recruitment of highly skilled, qualified experts. Expertise needs to encompass not only technical skills but also the legal and business negotiation skills that are necessary for integrating computational capacity into an overarching program of collections and research engagement.

Broadening the collections budget as a means of supporting nontraditional resources and activities—including digital scholarly communication tools, open-access fees, software applications, digital preservation, and organizational memberships—is critical. However, the reality of ongoing pressure on collections budgets cannot be ignored and might seem unsustainable and unrealistic when the challenge to “do more with less” has never been more real or more urgent.

Libraries have already become more efficient in managing collections (for example, by shifting to more on-demand monograph acquisitions models) and have diverted savings to support the increasing costs of journal packages, leaving little capacity to support modern research needs. Research libraries must identify ways to be more aggressive and creative to support computational collections—for example, by moving funding away from narrow database or journal package subscriptions or by creating co-investment and cost-sharing models with offices of research and technology. Although moving from a single oversight/ownership model to a campus-wide



ALEXSL/ISTOCK

shared investment model leads to more complicated alliances to compile, shepherd, and sustain funding, for most institutions this shift might represent the most efficient long-term way of addressing data-intensive research.

Collections should be blended as a service, with computational capacity that spans organizational, cultural, and technical boundaries. The challenge for libraries and scholars becomes how to shift models toward a synthesis of content- and service-centricity that also incorporates software and tools such as text-mining, computational analysis, artificial intelligence, machine learning, data publication, and data computation. Libraries have the ability to build on decades of digital collections work, but they need to start investing with more intention and on a larger scale. Libraries and their partners must bring robust collections and emerging computational tools together with developing professional expertise to unlock the combined potential. ■

## Note

1. “Always Already Computational: Library Collections as Data,” National Forum Position Statements, March 2017.

**Darby Orcutt** is Assistant Head of Collections and Research Strategy at North Carolina State University. **Hilary Davis** is Head of Collections and Research Strategy at North Carolina State University. **Greg Raschke** is Director of Libraries at North Carolina State University.

© 2020 Darby Orcutt, Hilary Davis, and Greg Raschke. The text of this article is licensed under the Creative Commons Attribution 4.0 International License.





# Preparing Workers for Anything: Human + Machine

**T**echnology is fundamentally remaking work, as advances in artificial intelligence and other computing capabilities make it possible to automate work previously thought untouchable. Artificial intelligence not only can process bank deposits or recommend books one might like but also, increasingly, can give quality feedback on writing or determine whether someone has cancer.

Many of these jobs—bank teller, bookstore clerk, writing instructor, radiologist—were, not too long ago, the exclusive domain of humans. And they demonstrate that even a high level of knowledge and skill can’t insulate today’s workers from being automated out of a job. Nevertheless, we know that jobs featuring repetitive, routine tasks in fields like manufacturing, retail, and finance are prime candidates for automation.<sup>1</sup> This evolution will disproportionately impact low-income and otherwise disadvantaged Americans, the ones who can least afford it.

There is disagreement, however, among technologists, economists, and futurists about the exact impacts that artificial intelligence will have on society and work. And as George Siemens wrote to kick off the *New Horizons* department for 2020: “We should not expect accurate forecasts or even consensus about the longer-term development of AI and how it may intersect with, and impact, humans.”<sup>2</sup> The future of work is far from certain.

Against that backdrop, learners and workers must prepare for a future of work that could be just about anything. That, of course, means learning to be agile and adaptive, to seek out new opportunities, and to continuously learn. Workers—like institutions—will be most successful if they know how to craft plans and careers that accommodate diverse futures, rather than a single version of the future.<sup>3</sup> This means the capabilities that will set workers up for long-term success are not necessarily fixed skills but are ones like creativity, problem-solving, and social awareness. Moreover, while skills will be critically important, alone they won’t be enough.

In fact, a recent analysis from Entangled Solutions, drawing on both research and practice focused on career navigation, revealed three critical career pillars that individuals will need in order to be

successful in the modern economy: occupational identity, social capital, skills.<sup>4</sup> Understanding the different, but deeply interrelated, roles that the three pillars play in career development is essential to helping workers navigate the machine-powered economy of the future.

## Occupational Identity

Occupational identity is what you believe you can be: what you like to do, what you are good at doing, and where you perceive you belong. It is a critical piece of career navigation. As noted by the authors of a report reviewing research on youth occupational identity: “Occupational identity development is an underexplored piece of the puzzle in improving pathways to occupations.”<sup>5</sup> Children are especially open to trying out different career identities, but identity continues to evolve over time

as people enter the workforce and accrue experience. Thus, schools, colleges, and employers all have an important role to play in helping opportunity seekers develop a strong sense of self as it relates to career.

Developing an occupational identity is less about choosing a specific career field or aligning oneself with O\*NET job descriptions and more about understanding what one likes to do. This is what Diane Tavenner, a charter school founder, calls discovering the “ings” that people like and are good at—things like coding, writing, managing, and inventing.<sup>6</sup> Opportunity seekers of all ages, from a middle-schooler to a recently laid-off cashier in her fifties, can be helped to understand how their preferences and skills can transfer across different jobs and careers.

Career navigation coaches and tools can be instrumental in walking people through this process. And as millions of people are automated out of their jobs now and in coming years, employer-provided “outskilling” and other navigation supports can help them translate their skills to new roles or understand what skills they need to develop. Employers play an especially critical role in helping people see how they might move within the company.

As technology transforms the way we work and the jobs humans are asked to do, opportunity seekers need support in developing an occupational identity that is both adaptable and enduring.

**Understanding the different, but deeply interrelated, roles that the three pillars play in career development is essential to helping workers navigate the machine-powered economy of the future.**

## Social Capital

Social capital—who you know—is the breadth and depth of your relationships and is an important career asset.<sup>7</sup> Early in life, these relationships expose learners to career pathways and enable exploration. As students advance through education and enter the workforce, these relationships are critical to understanding different pathways, finding opportunities, and ultimately landing jobs.

Eight out of ten jobs are never publicly advertised, creating a “hidden market.”<sup>8</sup> Referrals make up 40 percent of new hires, even though only 7 percent of job applicants get a personal referral from someone at the hiring company.<sup>9</sup> This distorts what we understand as the skills market and, all too often, reinforces socioeconomic disparities. People may, in fact, have the necessary skills but lack the social capital to leverage them into jobs. The hiring system may also reward people who lack important skills but have social capital.

Employers’ efforts to move toward skills-based hiring—using digital screening tools and skills assessments—should, in theory, reduce the role of social capital in hiring. But a growing body of research shows that social capital actually plays a critical role in understanding how to navigate such screening systems. Employers should work hard to apply transparency to this process and, more broadly, to put workforce systems in place that help workers naturally develop useful relationships and networks.

Mario Luis Small, a sociologist at Harvard, has shown that the range and the usefulness of people’s networks have far less to do with deliberate networking than with conditions in the institutions they frequent, including schools, colleges, and workplaces.<sup>10</sup> A growing number of researchers, including Julia Freeland Fisher, director of education at the Clayton Christensen Institute, are thus exploring how both schools and postsecondary institutions can help level the playing field. Freeland Fisher noted: “If we’re trying to create a set of educational institutions and programs that fuel upward mobility, we need to start thinking about how to deliberately integrate social components into learning environments. “We need to be explicit about training students how to build, grow, and maintain social capital and creating more channels to accessing new networks.”<sup>11</sup>

Meanwhile, digital technology makes it far easier for people to connect meaningfully across geographies: career navigation tools like Handshake and PeopleGrove are focused on helping opportunity seekers develop their networks. This work is critical to building equity.

## Skills

Skills—what you know how to do—form the most-talked-about career pillar. And of course, a well-formed occupational identity and even social capital can get someone only so far if they haven’t developed the skills necessary to start, restart, or grow in their career.

And as it stands, our K-12, postsecondary, and workforce and hiring systems are disjointed and aren’t well-designed to help

learners both develop in-demand skills and translate them to the world of work. But a number of efforts, such as the T3 Innovation Network at the US Chamber of Commerce Foundation, are underway to reimagine education, training, and hiring in ways that will put career skills front and center. In fact, many employers are at least exploring ways to deemphasize proxies such as a degree and focus on skills-based hiring.<sup>12</sup>

This shift could open jobs to a wider range of workers, but opportunity seekers will have to be able to develop, demonstrate, and clearly articulate skills. This need is particularly acute around soft skills—such as communication, critical thinking, and creativity—which are more complicated to measure and are of increasing importance as automation renders more routine skills obsolete. “The skills that matter most now and into the future are ‘human’ skills that can’t be performed by machines,” says Michelle Weise, chief innovation officer at the Strada Institute for the Future of Work. “We need better ways for students to understand, develop, and translate those skills into the language of the labor market.”<sup>13</sup> And we must also do a better job of helping opportunity seekers understand where the market for skills is heading.

\*\*\*\*

Taken together, occupational identity, social capital, and skills—the three career pillars—provide a base from which individuals can continue to explore, develop, and consider new opportunities as the demands of work and the contours of career continue to shift around them. That kind of agility will be not only advantageous but essential in our new human + machine reality. ■

## Notes

1. Jacques Bughin, “Skill Shift: Automation and the Future of the Workforce,” McKinsey & Company, May 23, 2018.
2. George Siemens, “The Post-Learning Era in Higher Education: Human + Machine,” *EDUCAUSE Review* 55, no. 1 (2020).
3. Malcolm Brown et al., *2020 EDUCAUSE Horizon Report: Teaching and Learning Edition* (Louisville, CO: EDUCAUSE, 2020).
4. Allison Dulin Salisbury and Kate Kraft, “Unlocking Career Potential: An Analysis of the Career Navigation and Guidance Product Landscape,” Entangled Solutions, April 2020.
5. Jessica Callahan, Mizuki Ito, Stephen Campbell Rea, and Amanda Wortman, *Influences on Occupational Identity in Adolescence: A Review of Research and Programs* (Irvine, CA: Connected Learning Alliance, May 2019).
6. Diane Tavenner, *Prepared: What Kids Need for a Fulfilled Life* (New York: Currency, 2019).
7. Julia Freeland Fisher, *Who You Know: Unlocking Innovations That Expand Students’ Networks* (San Francisco: Jossey-Bass, 2018).
8. Nancy Collamer, “6 Ways to Crack the ‘Hidden’ Job Market,” *Forbes*, August 12, 2013.
9. Austen, Graeme, “4 Steps to Landing a Job Referral Without Any Insider Connections,” *Fast Company*, June 1, 2016.
10. Mario Luis Small, *Unanticipated Gains: Origins of Network Inequality in Everyday Life* (Oxford: Oxford University Press, 2009).
11. “Innovator Spotlight: Julia Freeland Fisher on Making Social Capital Work for Underresourced Communities,” Strada Education Network (website), November 15, 2019.
12. Walton Family Foundation, Strada Education Network, and Entangled Solutions, “Opportunity Pathways” [January 2019]; Sean R. Gallagher, “Educational Credentials Come of Age,” Center for the Future of Higher Education and Talent Strategy, Northeastern University, December 2018.
13. Weise quoted in Salisbury and Kraft, “Unlocking Career Potential.”

Allison Dulin Salisbury is Senior Vice President at Guild Education.

© 2020 Allison Dulin Salisbury.





# IT Service and Superpowers

**A**s we all faced unprecedented challenges caused by the pandemic over the past several months, I thought a lot about whether humans have “superpowers.” I don’t think those of us who are working in higher education IT service can compare ourselves to the incredible frontline people in health care, the first-responders, and many of the others who have served our communities to keep us safe and alive, but our role in education remains essential to a high-functioning society.

As my family isolated ourselves and found new ways to get work done, we used some of the “non-work” time to do a March Madness Bracket for the Marvel Cinematic Universe films. I had no idea that there were more than twenty Marvel superhero movies. Watching each movie and assessing each character’s superpower, I realized that the real impact was the combined value of all the superpowers when applied to a common objective. Over and over again, the superheroes managed to save humanity against overwhelming odds. In almost every case, no superhero acted alone.

So, what do superpowers have to do with IT service?

Over the years, I have been inspired by the incredible talents and abilities of so many IT professionals. None of them could time travel, change shape, or teleport. One of my staff members once told me he could make himself invisible, but I think he just took long coffee breaks at the student union.

Some of the special powers that I have witnessed in IT professionals are related to technical work or efforts that support teaching, learning, and research. Other IT professionals show incredible capabilities in leadership, management, empathy, self-awareness, and/or communications. Yet even with all of these individual talents, no one was able to deliver extraordinary results or serve at a high level on their own.

The incredible powers exhibited by higher education IT professionals become superpowers only when we work together, relying on the contributions of others. I have consistently observed three

collective superpowers that seem to set us apart as we serve our faculty, students, staff, and community with unparalleled distinction.

Our first superpower is *collaboration*. We exercise collaboration with energy, enthusiasm, consideration, and care. We share what we learn from our successes and our failures across our community and beyond. We admit our mistakes and come together virtually or in person to learn, teach, and listen. We enjoy and respect one another, and we recognize that we are better together. We give and receive with humility, expecting nothing in return.

Our second superpower is *diversity and inclusion*. This is not only about the color of our skin, our gender identity, our spiritual beliefs, or our ancestry. We recognize and appreciate that every person’s experiences, perspectives, and energies fuel our creativity, productivity, and capacity to deliver. We fundamentally believe that education belongs to everyone: the privileged, the disadvantaged, and the disenfranchised. We embrace exceptional IT service as an equalizer. Diversity enriches each of us and our organizations as we help students learn, as we support faculty members’ teaching and research, and as we provide systems and applications essential to our campuses across the globe.

Our third superpower is *adaptability*. Over the last forty years, IT professionals have been challenged to continuously rearm ourselves to create, manage, and deliver IT services as our systems have evolved from mainframes to minicomputers, to client-server architectures, to a web-enhanced desktop/laptop world, and now to mobile platforms that embrace and leverage cloud services. We have adjusted and learned, and we have helped others apply IT services in their work with agility and skill. As we have worked through the most recent pandemic, we applied responsiveness and adaptability at superhero pace as we helped transform our campuses to virtual delivery systems in teaching, learning, research, and administrative operations.

IT service providers don’t tap into our three superpowers—collaboration, diversity and inclusion, and adaptability—simply when it is convenient or when the situation calls for application of a superpower. As we have evolved into higher education enablers, partners, and service providers, these superpowers have become fundamental components of who we are.

As a result of the pandemic and months of social distancing and isolation, I know much more about the Marvel Cinematic Universe. Yet while I

watched superpowers come alive in these movies, I realized that superpowers in the real world are much more important.

Higher education will change as a result of the pandemic and the subsequent financial crisis. It is incumbent upon each of us to make sure that we emerge better, stronger, and more resilient. As our colleges and universities face these challenges, exceptional IT service will be needed more than ever.

I take comfort in knowing that higher education IT service has many superheroes. I also realize that we all don’t need to be superheroes. We don’t even need to be “everyday” heroes. If we simply demonstrate care and respect for one another and maximize the application of our talents as we embrace collaboration, diversity and inclusion, and adaptability, we will contribute more than most of us thought possible.

As one Marvel superhero said, “It is a privilege to be among you.” ■

**Ron Kraemer** is the retired CIO from the University of Notre Dame and is a member of the EDUCAUSE Alumni Group. He stays active working on special projects for EDUCAUSE and Internet2 and serves as a coach and mentor for IT professionals.

© 2020 Ron Kraemer



BOOKZV/SHUTTERSTOCK

## EDUCAUSE

UNCOMMON THINKING FOR THE COMMON GOOD

EDUCAUSE is a nonprofit association and the foremost community of IT leaders and professionals committed to advancing higher education.

### EDUCAUSE Board of Directors

**Michele Norin, Chair**  
Senior Vice President & Chief Information Officer  
Rutgers, The State University of New Jersey

**Sue B. Workman, Vice Chair**  
Vice President for University Technology & Chief Information Officer  
Case Western Reserve University

**Joe Moreau, Secretary**  
Vice Chancellor of Technology & Chief Technology Officer  
Foothill-DeAnza Community College District

**Keith W. McIntosh, Treasurer**  
Vice President & Chief Information Officer  
University of Richmond

**Michael Berman**  
Chief Information Officer  
California State University, Office of the Chancellor

**Elias Eldayrie**  
Vice President & Chief Information Officer  
University of Florida

**Helen Norris**  
Vice President & Chief Information Officer  
Chapman University

**Amelia Parnell**  
Vice President for Research and Policy  
NASPA - Student Affairs Administrators in Higher Education

**Mark Roman**  
Chief Information Officer  
Simon Fraser University

**Celeste Schwartz**  
Vice President for Information Technology & Chief Digital Officer  
Montgomery County Community College

**Carol Smith**  
Chief Information Officer  
DePauw University

**Jennifer Sparrow**  
Associate Vice President, Teaching and Learning With Tech  
The Pennsylvania State University

**Ex Officio**  
**John O'Brien**  
President and CEO  
EDUCAUSE

The incredible powers exhibited by higher education IT professionals become superpowers only when we work together, relying on the contributions of others.



## Advertiser Index

Company	Contact	Website	Page
Campus Management, <i>Gold Partner</i>	1-561-923-2500	www.anthologyinc.com	4
CTI	1-781-273-4100	www.ctidata.com	6
Jenzabar, <i>Platinum Partner</i>	1-800-593-0028	www.jenzabar.com	inside front cover
LaptopsAnytime	1-877-836-3727	www.laptopsanytime.com	3
Laserfiche, <i>Gold Partner</i>	1-800-985-8533	info.laserfiche.com/TopTen2019	inside back cover
Moran Technology Consulting, <i>Gold Partner</i>	1-888-699-4440	www.MoranTechnology.com	23
Nelnet Business Solutions	1-888-470-6003	www.campuscommerce.com/secure-smarter	back cover

# A Shared Commitment

Our goal of advancing the future of higher education is shared by our corporate Platinum Partners. We thank them for their unparalleled support.



**DELL** Technologies

**ellucian.**

**Gartner.**



**Microsoft**

**ORACLE**

**workday.**

[educause.edu/corporate-partners](https://educause.edu/corporate-partners)

**EDUCAUSE**

# Community Is About Connection



Connect with peers from around the world in over 60 topic-based community groups. Share ideas, discuss issues, and find solutions to pressing matters in higher ed IT.

[educause.edu/community](https://educause.edu/community)

**EDUCAUSE**



# Strengthening Higher Education Together

EDUCAUSE thanks our 2020 Corporate Partners for playing a meaningful role in helping higher education deliver on its mission!


We also thank 375+ additional corporations who support our community.  
[educause.edu/corporate-partners](https://educause.edu/corporate-partners)

EDUCAUSE

## Reach New Heights with a Trusted Partner



**Laserfiche**<sup>®</sup>

Build your modern campus today with the Laserfiche content services platform.

Learn more at  
[info.laserfiche.com/ER2020](https://info.laserfiche.com/ER2020)



# Payment technology for a smarter campus

“For us, security is a part of life. It’s not just in conversations with customers or quotes for an advertisement. It’s in our software, our processes, our culture — it’s who we are. We make sure your data is secure, so you can focus on what matters most: education. Because that’s what a partner does — and that’s what a partner deserves.”

- MIKE WALTERS, CHIEF INFORMATION OFFICER

## Secure Smarter

[CampusCommerce.com/SecureSmarter](https://CampusCommerce.com/SecureSmarter)



MIKE WALTERS  
CHIEF INFORMATION OFFICER  
Nelnet Campus Commerce

