Turning Data Into Wisdom

Harnessing the Power of Your Campus's Data

By Jeffrey Selingo

Key Findings

- While institutions have upgraded their technology over the past two decades to interpret and leverage vast treasure troves of data, their goal of building a seamless student and employee experience with more frequent and customized interactions remains elusive—as does their ambition for a coherent view of campus operations.
- The problem is that the data infrastructure in higher education has been assembled much like the institutions themselves: as silos with schools and divisions as their own fiefdoms.
- Higher education still tends to prioritize intuition and experience over data. Too often campus decisions are based on the gut instincts of administrators, staff, and faculty, as well as anecdotes.
- Turning data into wisdom is what ultimately drives institutions on their journey to increased student success, research prowess, and prestige. Making useful decisions based on the stream of data that is coming at you each day is a critical piece of the foundation for digital transformation in higher education.
- Two key approaches are critical to turning data into wisdom: shifting the mindset of campus toward an analytical culture that brings people along with the technology and maintaining proper data accountability.
- Four key areas where institutions can draw wisdom from data to accelerate their transformations and build new business models for sustainability include: enrollment, operations, student success, and advancement.

ABOUT THE AUTHOR

Jeffrey Selingo has written about global higher education for more than two decades. He is the author of four books on higher education; the latest, *Who Gets In and Why: A Year Inside College Admissions* (2020). He is co-host of the podcast, *Future U.*, and editor of the higher education newsletter, *Next*. You can find out more about him at jeffselingo.com.

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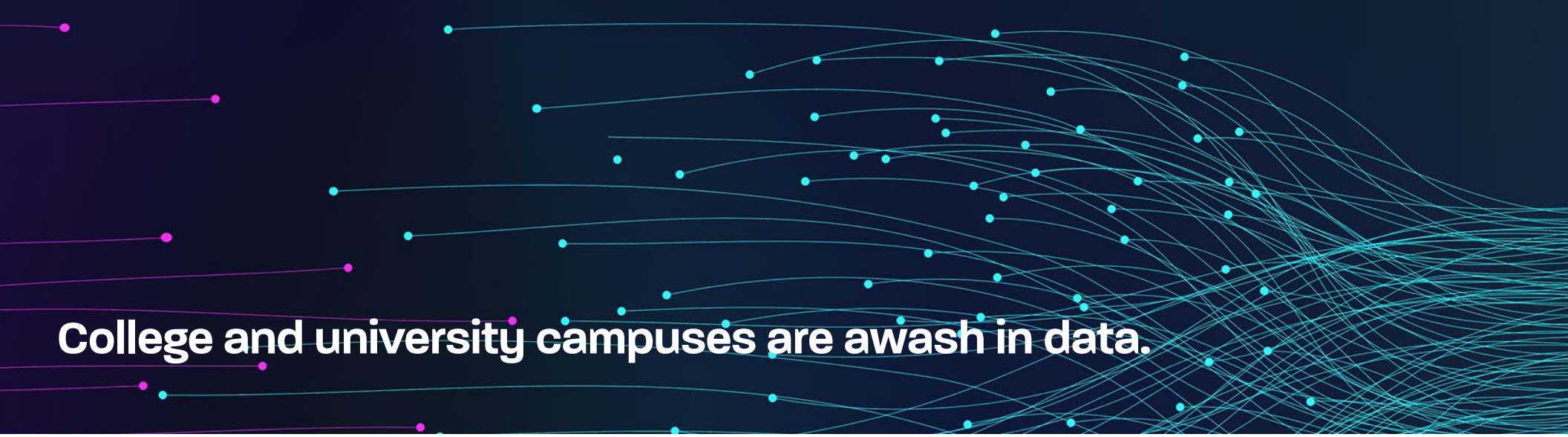

College and university campuses are awash in data.

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Everyone from students to faculty to staff generates valuable bits of data as they go about their daily activities. Whether it's a student posting a comment in the learning management system and furnishing data on their classroom engagement or faculty members triggering light sensors in their offices and supplying information on space utilization, the explosion of data in higher education is often overwhelming in its volume.

While institutions have upgraded their technology over the past two decades to interpret and leverage these vast treasure troves of data, their goal of building a seamless student and employee experience with more frequent and customized interactions remains elusive—as does their ambition for a coherent view of campus operations. That's because the data infrastructure in higher education has been assembled much like the institutions themselves: as silos with schools and divisions as their own fiefdoms. At many colleges, student data comes in through an applicant tracking system, then moves to the student information system and the learning management system (and sometimes to multiple ones if different schools within a university have their own LMS). At the same time, campuses have data stored in parallel applications used to communicate with students, deliver their financial aid, and eventually connect with them as alumni.

"We don't lack for the data or the software to extract information from it," the chief information officer at a big public research university told me. "What we lack is the capacity to make timely decisions based on the data."

CIOs are not alone in that viewpoint. Various surveys of C-suite leaders in higher education have consistently found that the inability to translate data is a barrier to transformation. More than half of college and university CFOs said in a recent *Inside Higher Ed* survey, for instance, that a lack of analytical capacity is a "significant obstacle" to a sustainable future at their institutions.

While it's often said that data without insights is meaningless, so too are insights if they're not coupled with action. Turning data into wisdom is what ultimately drives institutions on their journey to increased student success, research prowess, and prestige. Making useful decisions based on the stream of data that is coming at you each day is a critical piece of the foundation for digital transformation in higher education.

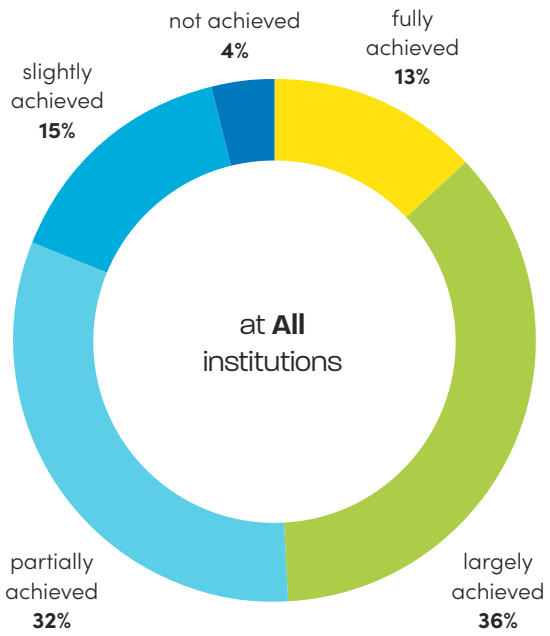
FIGURE 1

The State of Data-Driven Decision Making

Campuses are inundated with data, but there is still room to improve in using the data to make decisions, according to chief information officers (CIOs) and chief academic officers (CAOs).

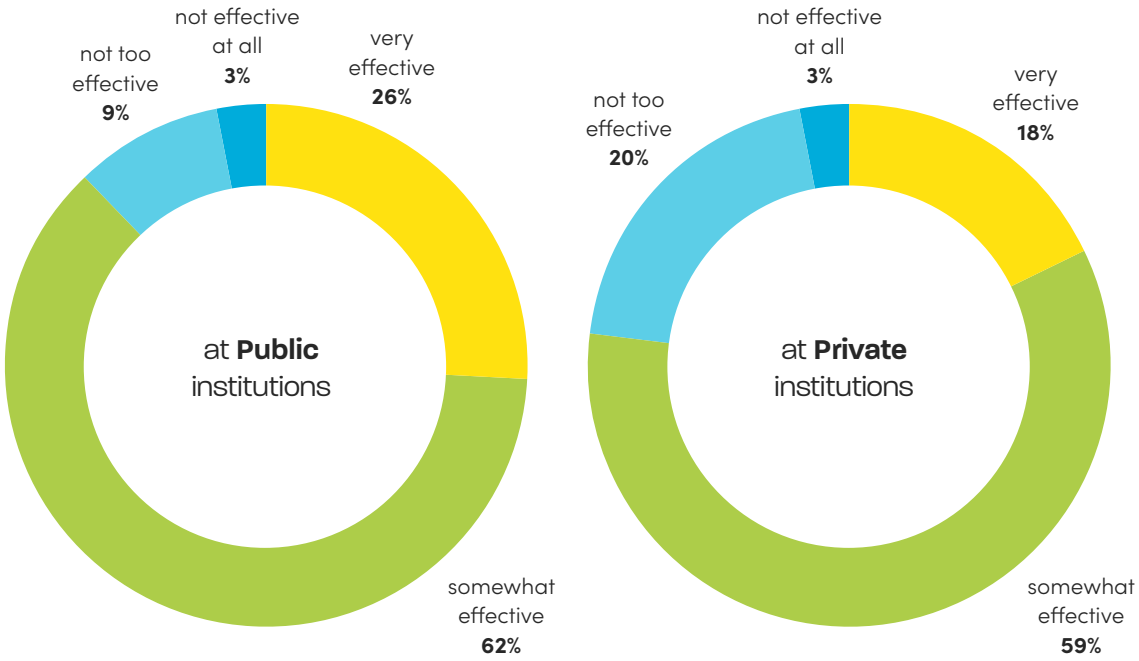
What **CIOs** say

Our institution makes sure the use of data to make decisions is accepted throughout:



What **CAOs** say

Use of data to aid and inform campus decision making:



Sources: Educause; *Inside Higher Ed*

How Can Campuses Start Deriving Wisdom from Their Data?

When the talk in higher education turns to data, the comparison that often comes up is to big consumer brands, such as Netflix and Amazon, where data drives their business success. But the key difference is that college campuses aren't tech companies with extensive data science expertise, where teams of technologists are constantly tweaking algorithms to spur performance.

Higher education still tends to prioritize intuition and experience over data. Too often campus decisions are based on anecdotes and the gut instincts of administrators, staff, and faculty.

So, the first step to turning data into wisdom is shifting the mindset of campus toward an analytical culture that brings people along with the technology. This starts with good "data hygiene," so that everyone on campus is starting with a common set of facts. Taking a step back to ensure the robustness of a college's own data, "helps us focus the campus on the big issues," says Jonathan Dryden, provost and vice president for academic affairs and university partnership at Lorain County Community College.

Lorain is among a handful of institutions that have become prime examples of progress for their student success efforts rooted in data. The Ohio community college raised its three-year graduation rate by 15 points in less than a decade in part by scaling pilot experiments where the data showed early success. Similarly, the graduation rate at Georgia State University has risen by 23 percentage points over 15 years through a series of interventions, from just-in-time retention microgrants to intrusive advising, which were designed in large part from an analytics system that monitors more than 800 student risk factors.

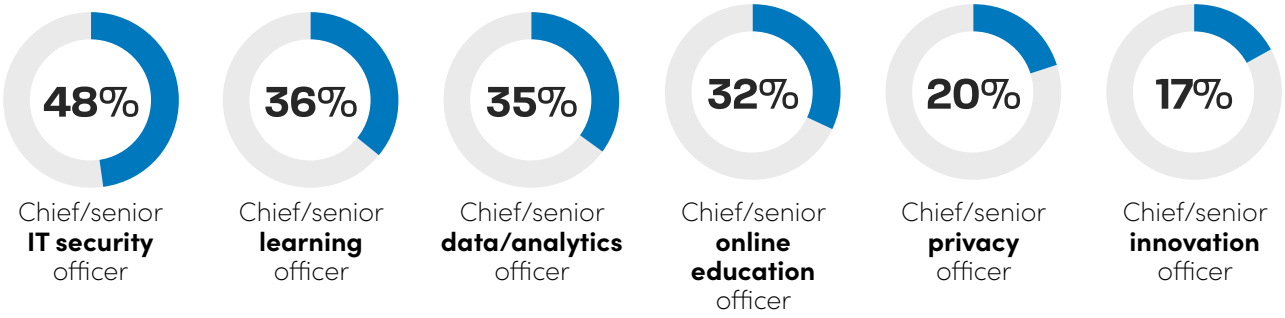
Another essential approach to making a campus more data-driven is proper data accountability, especially at the very top of the organization. "It's imperative to reserve a number of executive positions for people with genuine analytics expertise," write Sheri L. Feinzig and Nigel Guenole, co-authors of *The Power of People: Learn How Successful Organizations Use Workforce Analytics to Improve Business Performance*. "It's only when deep expertise exists at the top of the org charts that a penchant for evidence-based decision-making will develop pervasively throughout the organization."

This approach is why the Chief Data Officer is increasingly becoming a more common title on college campuses. In recent years, St. John's University, Michigan State, Oregon State, and William & Mary, among others, have added the position. Meanwhile, Purdue University operates a Business Intelligence Competency Center, which "serves as the central hub equipping Purdue's

FIGURE 2

Overseeing Data

While the number of chief data officers is growing in the corporate sector, in higher education senior IT security officers are more common than chief data officers. Percentage of institutions reporting that they have a...



Source: Campus Computing Survey

information producers with data, tools, services, and expertise." And many institutions, through professional development are trying to get more of their senior staff to pay attention to data.

"Part of the culture change is taking these folks who are already embedded in finance or university advancement or admissions, having them learn the basis of data, so then they can raise their hand to say, 'Here's how we can use data to make better decisions,'" says Param Bedi, vice president for library and information technology at Bucknell University.

Using Data to Accelerate Digital Transformation

At Bucknell, data is a strategic priority for the university's president, John Bravman, an engineer by training. But that focus is not common. A text analysis of nearly 600 state institutions' publicly available strategic plans by Deloitte's Center for Higher Education Excellence in 2018 found that that "data-driven decision making" was included in fewer than one in ten plans.

My research found that most colleges and universities continue to struggle to build data into their strategic plans and unleash the power of data across their campuses. In interviews with higher education leaders, I have identified four key areas where institutions can draw wisdom from data to accelerate their transformations and build new business models for sustainability.

FIGURE 3

Opportunities to Glean Wisdom from Data

Four areas where institutions can better leverage data to gain an edge on performance and outcomes:

Enrollment

- Improve the efficiency of the recruitment process by developing student segments most likely to enroll and persist.
- Customize the enrollment process with tailor-made communications and engagement.
- Personalize the financial aid award process to improve yield.

Operations

- Analyze real-time labor market data to build new academic programs and skill-based credentials.
- Rely on temperature, lighting, and utility use to maximize space usage and increase campus sustainability measures.
- Identify opportunities for new revenue streams.

Student Success

- Make the student experience more adaptive to the needs of individual students based on the data institutions know about them.
- Simplify pathways through degree programs by better understanding where students are getting stuck.
- Build in interventions by arming advisors and faculty members to reach out to students rather than wait for students to come to them.

Advancement

- Personalize alumni engagement at scale.
- Identify and connect with the next generation of major-gift donors earlier on.
- Create connected experiences across the student lifecycle to bridge alumni experience with current student demand for internships, networking, and professional development.

Enrollment Planning

The pandemic upended higher education, especially how students and their families first experience college—through the admissions office. Enrollment in higher education has declined by more than 1.4 million students since 2019, and that's before the demographic cliff expected in 2025, when the number of high school graduates across the U.S. begins a steady decline.

Right now, colleges' strategic enrollment plans tend to follow what's familiar to them or what's popular in higher education. So, colleges try to dig deeper in geographic markets where their brand name is already known to recruit students or follow competitors to new locales with growing numbers of high-school graduates, such as California, Texas, and Florida.

Here's where gathering and gleaning wisdom from data can help push a campus in an innovative direction. Take Wabash College as an example of this approach. The small, private men's college in Central Indiana wanted to better understand which prospective students were most interested in enrolling and who might be nudged to enroll with additional outreach or a campus visit.

The college studied pre-enrollment data about current students, such as webpage visits, email open rates, legacy status, financial aid applications, and scheduled campus visits. Then the college built a tool that applied the insights from that data to prospective students and generated a score predicting the probability a student will convert into an applicant.

Chip Timmons
dean of enrollment management and director of admissions / Wabash

One powerful data point revealed there is a 67 percent chance a student who visits two different Wabash College web pages on the same day is going to apply. Using interest scores allows Wabash College to spend its time, and costly resources like mailings, personal phone calls, and high school visits, on a more narrow population.

"It's a way to give more attention and aggressively recruit this population that historically has been pretty high yielding," says Chip Timmons, dean of enrollment management and director of admissions at Wabash.

Toward Turning Data Into Wisdom

In interviews, college leaders and technologists provided the following advice to accelerating a data-driven culture:

Start at the top.
Colleges with strong data-driven cultures tend to have top leaders who set an expectation that decisions must be anchored in data and celebrate examples where data has united stakeholders in different campus silos.

Allow for uncertainty.
Absolute certainty in any decision is impossible. Requiring teams to be explicit about their levels of uncertainty "pushes institutions to run experiments," says Tim Renick, executive director of the National Institute for Student Success at Georgia State University.

Be mindful of privacy concerns.
Create a code of conduct for using student and institutional data. Be transparent on what personal information is collected and how it is used and shared, much like the University of Michigan does with its ViziBlue dashboard.

Student Success

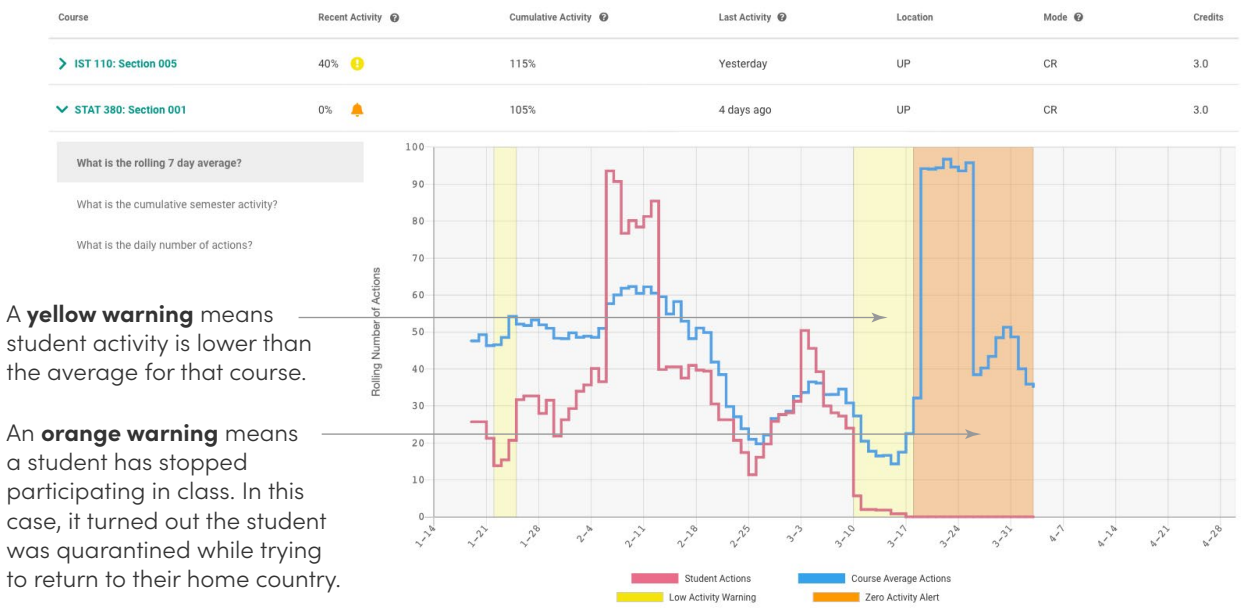
The pressure is on colleges for higher graduation rates, better retention, and more engaged students. Putting data in the hands of faculty and staff members empowers them to make data-driven decisions when revamping advising structures, revising curricular requirements, and designing more active teaching methods.

When Penn State University pivoted to remote education at the onset of the pandemic, its undergraduate advisors wanted to understand how students engaged with online material and ensure that students had the resources they needed to stay up to date with coursework. The university looked at existing data streams from its LMS, Canvas, as well as other student-facing technology platforms to identify data points relevant to engagement and persistence. What resulted was Elevate, an application which displays at a glance students' course activity.

By measuring an individual student's participation in online learning platforms—including file views, assignment views, quiz activity, and discussion forum posts—Elevate can compare that engagement against other classmates and flag students who engage with the course less frequently. Advisors can then look at their student rosters and prioritize which students they reach out to first.

Because Elevate is built on information supplied in part by Canvas, "people have had access to these facts for a long time," Drew Wham, a data scientist at Penn State, told me. The difference with Elevate, he said, "is how do we take facts, turn them into visualizations that provide clear insights, and then put those insights in the hands of people who have the agency to take action for the university in real time?"

Building on the success of Elevate, Penn State's data scientists created a second tool called Course Insights and geared it towards instructors. Using similar data, faculty gauge student engagement at various points during a course and gain insight from activity patterns, so they know, for instance, when students struggle with material at a specific moment in a class. Course Insights data also helps in class design and faculty training.



A screenshot from Penn State's Elevate application.

Alumni and Donor Engagement

In the decades before social media, colleges played a critical role in keeping students in touch with old friends or forgotten peers. But now alumni can maintain their networks online on their own through Facebook and LinkedIn.

That means colleges and universities need to draw wisdom from their data to better understand how they can be more relevant to alumni and donors in order to engage them in activities, volunteer opportunities, and fundraising.

Rather than simply pump out messages to alumni, for example, modern automated data-driven processes allow for better targeting of messages and offers. Years ago, the Columbia Alumni Association realized that personalizing communications to alumni wasn't enough; it had to draw on more data than simply a graduate's name and location to make the content applicable to what alumni wanted.

As a result, the association began sending more targeted messages to alumni. On a graduate's birthday, for instance, it offered a discount code for the bookstore along with a celebratory message. One-fifth of the alumni who interacted with that offer had been inactive over the last six months, and the association gained updated contact information for hundreds of them.

Similarly, the association sent alumni an email on the anniversary of their commencement with dynamic content that reminded them what else was happening the year they graduated. Open rates were significantly higher for that message than general ones. And when alumni sign up for the association's private LinkedIn group, instead of a generic welcome message, they receive career-related articles. Those emails had twice the open rate than a simple welcome.

Dynamic Planning

What's clear coming out of the pandemic is that institutions need to be more flexible in their operations and improve their response time to changes in the market. That flexibility is likely to be difficult in a sector known for lengthy planning horizons and annual budgets managed by strict timelines.

During the pandemic, a constantly shifting landscape—campus closures, disrupted academic calendars, and hybrid learning—required CFOs and those responsible for planning to constantly run scenarios and create contingency plans—often in the absence of reliable data and robust analytical tools.

Going forward, institutions need the tools to build more flexible budget and planning models, with more levers in them. Scenario planning is often seen in higher education as a one-off exercise, done every few years. But scenario planning provides the wisdom needed to make critical decisions when it is done in an iterative way.

When Virginia Tech embarked on building a more agile planning process in 2018, officials realized that they required data over time from many sources. Gathering that data also required creating a "data lake" with unstructured data, which is more malleable and allows faster analysis.

Instead of a planning model that might take a year to develop before the university could use it, officials at Virginia Tech now have access to dynamic models where they are able to extract the data they need, when they need it. What's more, data is now structured in a way for machine-learning tools to assist officials in building financial and planning models to make decisions they otherwise weren't able to see in real time.

A FINAL WORD

The complexity and the ambiguity of the decade ahead for higher education are enemies of a good strategy for institutions. Changing the mindset of the campus from intuition to data-driven may seem daunting at first for leaders or not a strategic priority, but much like cloud adoption it is a critical building block to full-scale digital transformation. Done successfully, a campus mindset that draws wisdom from the data will create a proactive and engaged faculty and staff that has a greater understanding of how to meet students where they are and provide opportunities for improvements and growth today and into the future.

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