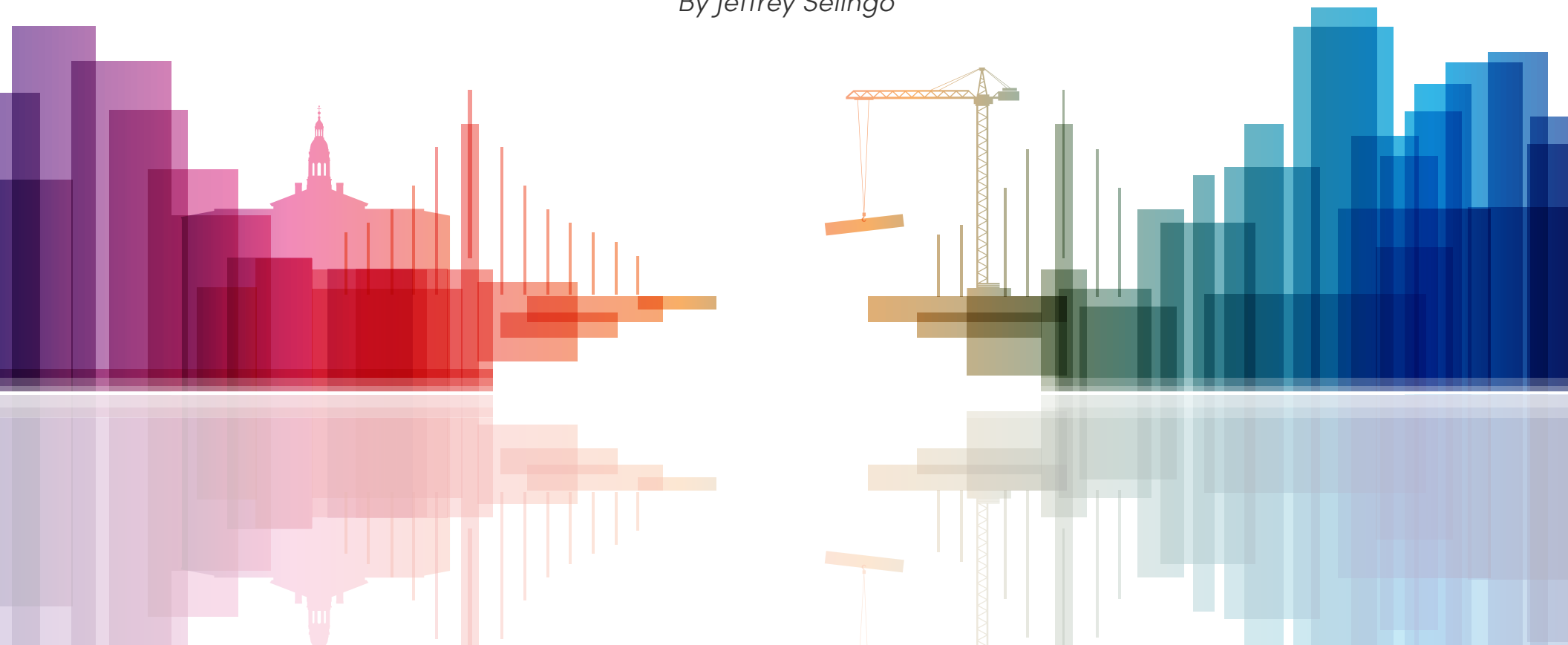


Strategies for **Digital Transformation** in Higher Ed

How institutions can bridge the analog divide
on their way to a digital campus

By Jeffrey Selingo



Key Findings

- Covid-19 only upped the pressure for digital transformation across campus. Instead of being seen as a service provider like a utility, technology must be embedded in every aspect of campus life to increase student success, research prowess, and prestige.
- Digital transformation means fundamentally stepping back and reconceiving the classroom, the student journey through college, the campus workplace, and how research is conducted.
- While university presidents believe that they've been leading in digital transformation given their huge investments in technology over the last decade, the reality on many campuses is that technology has been mostly adapted to fit the old way of doing business.
- The good news is that colleges and universities still have time to close the digital gap and build a real, long-term competitive advantage coming out of the pandemic by focusing on four areas on campus to drive digital transformation.
- Those four areas include modernizing campus information systems; blending different streams of data on campus stakeholders for better insight; using technology to enrich the student experience; and harnessing computing power to accelerate research breakthroughs.
- The imperative for digital transformation has many university leaders overwhelmed and struggling to cope. In the pages that follow, this brief lays out a framework for a strategy.

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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For years, colleges and universities have struggled to keep pace with technological innovation.

While institutions have upgraded their legacy student and financial systems, the interconnected and seamless “digital campus”—with cloud-based technologies delivering insights, data-driven decisions, and customizing the student experience using advanced analytics—has proven elusive.

Covid-19 only upped the pressure for digital transformation across campus. What was once thought of as a short-term pivot to “emergency remote education” at the beginning of the pandemic is fast becoming a new normal. Learning, research, and the academic workplace itself are all undergoing a radical rethinking of their traditions and way of doing business.

Increased digital capabilities hold the promise to modernize every aspect of the student, faculty, and staff experience. That, in turn, allows colleges to offer more engaging learning experiences,

FIGURE 1

Mapping Digital Transformation

While digital transformation on campuses cannot be achieved with one particular initiative, several pillars are necessary to build the foundation for full-scale reinvention.

Accelerating Research

To win academic research funding and collaborate in a competitive environment, institutions need to manage and manipulate massive data sets and leverage artificial intelligence. Digital transformation in academic labs can also help campus leaders better understand how research can serve their institutions, as well as attract faculty and funding.

Enriching the Student Experience

Connections with faculty and staff and the ease of engaging with services are the essence of the “student experience.” By better designing and delivering every interaction with students, colleges can ultimately prove their value and raise both retention and graduation rates.

Modernizing and Securing the Institution

Real-time data provides insight to leaders about students, talent, and finances. It allows campuses to design new services by migrating from traditional technology to a cloud-based architecture.

Turning Data into Wisdom

By combining student performance data with information from academic advisors, colleges can identify student needs earlier and address issues that impact student success, including anxiety and depression as well as housing and food insecurity.

improve student outcomes, and operate more efficiently—and ultimately be ready for the looming demographic cliff, softening tuition revenue, and ever-evolving academic research.

“We’re not going back to 2019,” says Arthur Levine, former president of Teachers College, Columbia University, and a longtime scholar of higher education. The pandemic was a turning point, he

says, something he saw while researching his new book, *The Great Upheaval: Higher Education's Past, Present, and Uncertain Future*. “Universities need to operate differently by breaking down silos between departments, between schools, even between other universities.”

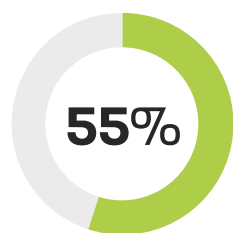
The [digital transformation of campuses](#) is no longer an option.

Instead of being seen as a service provider like a utility, technology must be embedded in every aspect of campus life to increase student success, research prowess, and prestige. Digital transformation means fundamentally stepping back and reconceiving the classroom, the student journey through college, the campus workplace, and how research is conducted.

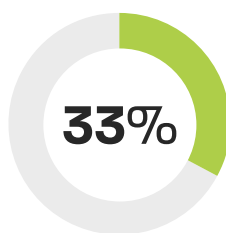
FIGURE 2

The Current State of Digital Transformation in Higher Ed

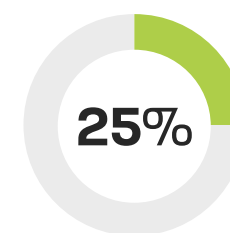
Colleges and universities remain behind other sectors of the economy in adopting a digital transformation strategy and then putting one in place.



Percentage of university leaders (deans, provosts, vice presidents) who say their institutions are on their way to digital transformation with the school outperforming peers and departments across campus working together.



Same leaders who said they are at least “moderately confident” that their data systems were integrated to make data-driven decisions and improve student success.



Same set of leaders who say that their institutions regularly use data analytics.

Indeed, there is a gap between the vision of campus leaders for digital transformation and the reality. Take, the integration of data between campus offices as one example. (below)

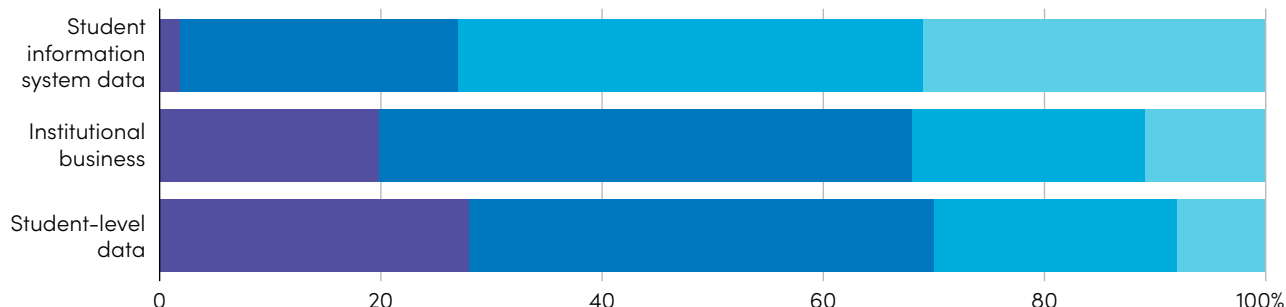
Ways to Go Toward the Connected Campus

Adoption and integration of data between campus offices and divisions is not as common as it may seem.

The State of Integration

- Data is systematically collected, integrated, and used.
- Data is systematically collected, integrated.
- Data is collected but not integrated.
- Institution does not collect usable data.

Sources: Boston Consulting Group; Educause



University presidents believe that kind of digital transformation is what they've been doing given their huge investments in technology over the last decade. However, the reality on many campuses is that technology has been mostly adapted to fit the old way of doing business. In other words, technology was the end in itself, rather than the means to achieve a full-scale transformation. Indeed, a 2021 survey by Boston Consulting Group of higher education administrators found a wide divide between leaders who think their campuses have achieved digital transformation and those that actually have.

A SHORT RUNWAY TO DIGITAL TRANSFORMATION

The good news is that colleges and universities still have time to close the digital gap and build a real, long-term competitive advantage coming out of the pandemic. But the runway is short for three key reasons:

First, the \$70 billion [provided by the federal government](#) to higher education in Covid relief packages will end by 2023, putting pressure on universities to cut costs or develop new revenue streams quickly.

Second, the [number of high-school graduates in the United States](#) will begin a rapid and steady

decline in 2026. The contraction in traditional students will only deepen the enrollment declines from the pandemic, when [undergraduate enrollment fell by nearly 8 percent](#). The high-school students going to college will come from demographic groups that higher education hasn't historically served well (low-income, first-generation students, and students of color), adding to the need to improve student outcomes overall. Moreover, the pandemic has had an impact on the academic, mental, and financial

well-being of all students, creating yet more challenges for institutions.

Third, the competition for federal scientific and engineering research funds will increase as more institutions look to improve their edge among the country's top research universities. At the same time, the rich are only getting richer: About one-third of federal research funds goes to fewer than two dozen universities.

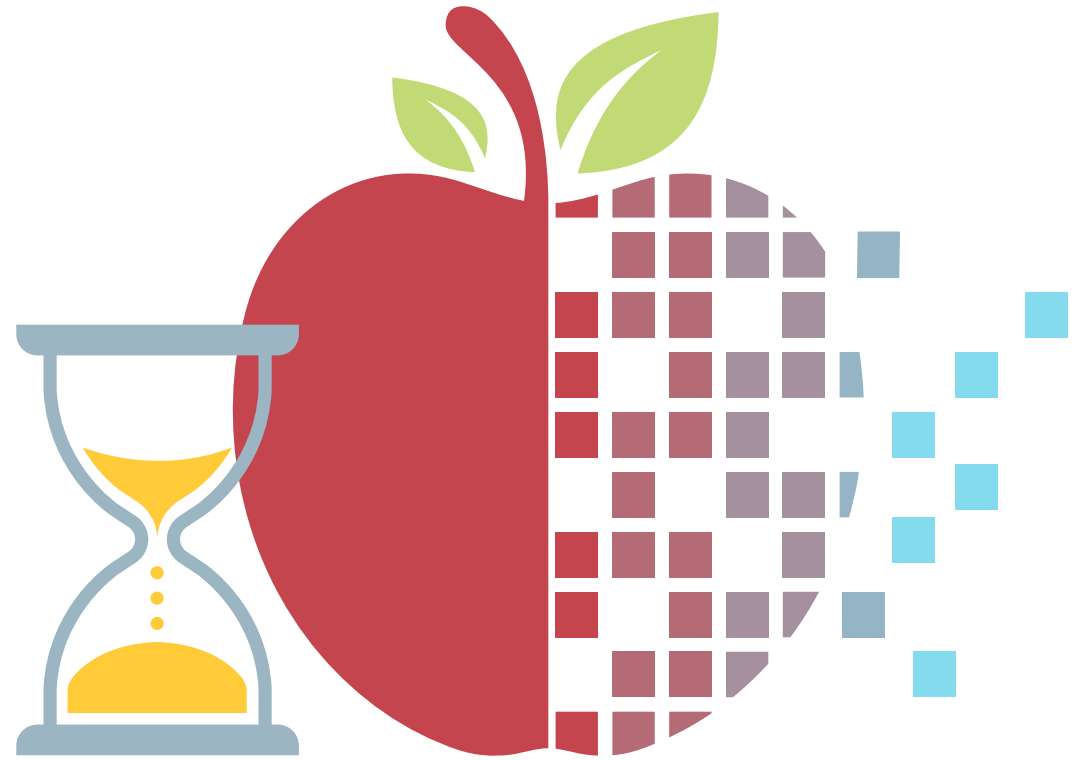
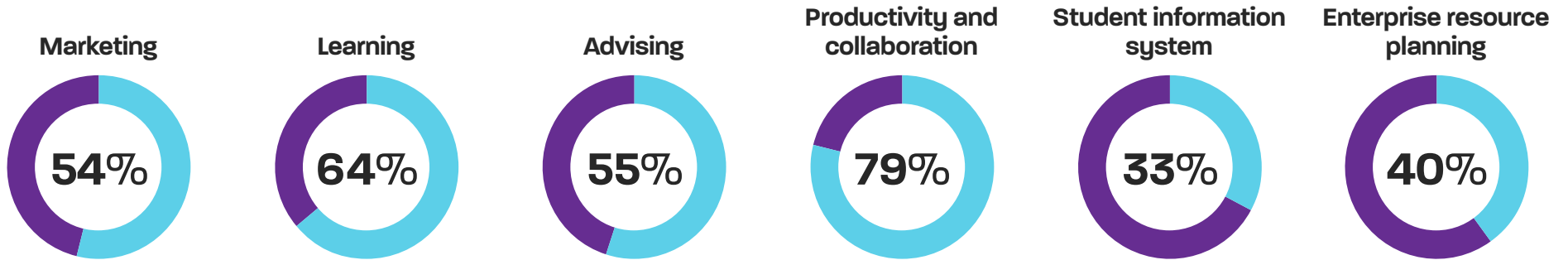


FIGURE 3

A Slow Shift from Traditional Tech to the Cloud

■ Percentage of institutional leaders who say their systems are in the public cloud using SaaS solutions

■ Percentage of institutional leaders who say their systems are on campus or using legacy technology in the cloud



Source: Boston Consulting Group

FOUR PILLARS OF DIGITAL TRANSFORMATION

The imperative for digital transformation has many university leaders overwhelmed and struggling to cope. Where should leadership teams start and how can they think systematically about what to do next? What are the best ways to use technology to ultimately engage students and faculty?

In my research and interviews with some two dozen leaders, including presidents, chief technology officers, and other officials, I have identified four ways to drive digital transformation in higher education over the next several years.



Modernize Campus Information Systems

Before the pandemic, higher education as a whole was slower than other industries in moving their vast and bulky information systems to the cloud.

Many colleges still owned their software and hardware that housed student information, human resources, and finance and kept those systems on campus in data centers.

The coronavirus exposed the lack of a reliable digital backbone at scores of colleges. To ensure the IT infrastructure was working and updated, staff members were forced to come to campus in the early days of the Covid-19 outbreak. Many systems cracked under the weight of heavy usage leaving administrators unable to plan in that critical period because they lacked real-time data about their operations.

Much of the discussion about higher education's response to the pandemic was whether campuses got online classes up and running quickly. But my interviews uncovered that a rapid response on the academic front was largely made possible by digital plumbing laid years earlier.

"We were planning for a pandemic before we even knew what a pandemic was," Param Bedi, vice president for library and information technology at Bucknell University, told me.

Bucknell is a residential college with 3,700 undergraduates in central Pennsylvania. It's a very traditional institution focused on in-person liberal-arts education. So it's not the type of campus one would expect to be a leader in digital transformation.

But six years ago, Bucknell started planning the [move of its enterprise systems to the cloud](#), which was completed in 2018. "We're not in the data center business; we are in the education business," Bedi says. Freed from worrying about critical updates to systems, the IT staff estimates it found 40 percent more time to work on strategic projects with faculty and students, such as expanding the use of [geospatial technologies](#) in teaching and research as well as visualizing and analyzing data for students in different majors.

"We shifted away from being the people who are going to run the systems to people who are going to help you make well-informed decisions or work on projects using digital tools," Bedi says. "That's

been the big shift, and we saw the real benefits during the pandemic."



Blend Data Streams for Better Insights

Universities are awash in data, but college leaders are often at a loss about how to interpret and make sense of it all. The solution at Maryville University was a data lake.

Many colleges have data warehouses, repositories for structured, filtered data that is typically used for one purpose, such as enrollment or advancement. The advantage of a data lake is that it houses largely unstructured data, which is more malleable and allows for faster analysis.

At Maryville, a private university with more than 11,000 residential and online students, officials can [draw insights from different data sources](#) that usually don't talk to each other. In its case, Maryville blends data from the university's student information system and its learning management system.

By constantly scrutinizing data, the university has reduced the time it takes to identify students in need. Maryville flags at-risk students and sends them automated text nudges to get them back on track. "For so many universities, at-risk identification is dependent on faculty members and advisors," says Maryville's president, Mark

Toward Digital Transformation

In interviews, college leaders and technologists provided the following advice to navigating the pathway to digital transformation:

Focus on the outcomes.

With so many possibilities, it's easy to get overwhelmed. What is it you want to achieve—better graduation rates, more engaged students, research with more impact?—and then focus your efforts in those areas.

Start with the supporters.

On most campuses there are departments and schools that are more innovative than others, willing to experiment and try things. Try to start new digital initiatives in those areas to serve as proof points for others.

Improve digital literacy.

Research shows that most people aren't very good at interpreting and making sense of data. Build peer-to-peer learning networks or encourage key employees to enroll in data literacy and science courses.

Lombardi. “Because we’re more data driven, we’ve shortened that timeframe.”

Instead of waiting for students to come to them for help, campus officials are aiming to identify student needs as they arise, which in turn improves retention and student engagement and makes campus services more efficient.

During the pandemic, the ability to analyze data from various sources revealed how students interacted with each other, Lombardi says. Take residence halls, as an example. The university offered many more single rooms to limit the spread of Covid. Without roommates, students sought help from their peers by interacting more often with friends.

“We learned a lot from the pandemic that helped inform our residential approach—everything from pairing roommates to the types of living arrangements to programming,” Lombardi says. “Universities tend to think of academic affairs and student life as separate, but we discovered from the data that peer-to-peer engagement was having a positive impact on student learning.”

3 **Employ Technology to Enrich the Student Experience**

A focus on digital transformation offers institutions the opportunity to improve the overall student experience and reduce the frustration learners

“Universities tend to think of academic affairs and student life as separate, but we discovered from the data that peer-to-peer engagement was having a positive impact on student learning.”

Mark Lombardi

President / Maryville University

often face in their day-to-day interactions on campuses.

Consider a call center at [Georgia State University](#) that mostly answers questions about financial aid. Operated by employees working in close proximity to each other, it was closed at the beginning of the pandemic. With employees working from home with mobile phones, calls couldn’t come into a central location and be routed to an agent, says Tim Renick, executive director of the National Institute for Student Success at Georgia State University. So the university moved to a system where students fill out information online before receiving a call back.

“Because we know the questions being asked in advance of picking up the phone, we’ve doubled

the number of cases we resolve every day,” Renick said. “And we’re not clogging up the phone lines with questions that are easy to resolve.”

Similarly, students in the College of Liberal Arts at the University of Texas at Austin use a chat function for questions about their online classes. If the student’s request can’t be answered by the chatbot, it is transferred to a human agent who already has insight into the problem. “So that person is ready to support them and ready to go,” said Antonino Cummings, a project manager at the university’s digital campus. “There’s no silly backtracking and repeating what you’ve already said.”

Before the pandemic, the small number of students who took online classes sometimes had to wait 15 or more minutes to talk with a human support specialist, Cummings said. Officials knew that approach wouldn’t work when every class went online, almost overnight. That’s when they developed the chatbot to sit between students and human support.

Student wait time to talk to an agent dropped to less than 30 seconds. In a 2020 survey, 84 percent of students rated it as easy to resolve technical issues with online tech support. Higher education needs to think about student experience “similarly to how somebody would think about customer experience,” Cummings said. “What can we do to make their lives easier? What can we do to make this simpler? How is our work going to make their lives better?”

4

Harness Computing Power to Accelerate Research Breakthroughs

The digital transformation of higher education also reaches into the research function of universities. Today, academic research increasingly depends on high-performance computing, big data, and artificial intelligence to drive innovation and discovery.

As a result, streamlining systems in the cloud that allow researchers to collect and mine data, test concepts, and collaborate with their counterparts around the world are all critical to running the modern research university.

The urgency to increase the speed and efficiency of research to solve the world's greatest challenges was demonstrated during the pandemic—whether that was coming up with testing protocols, developing vaccines, or identifying new variants of the ever-changing coronavirus.

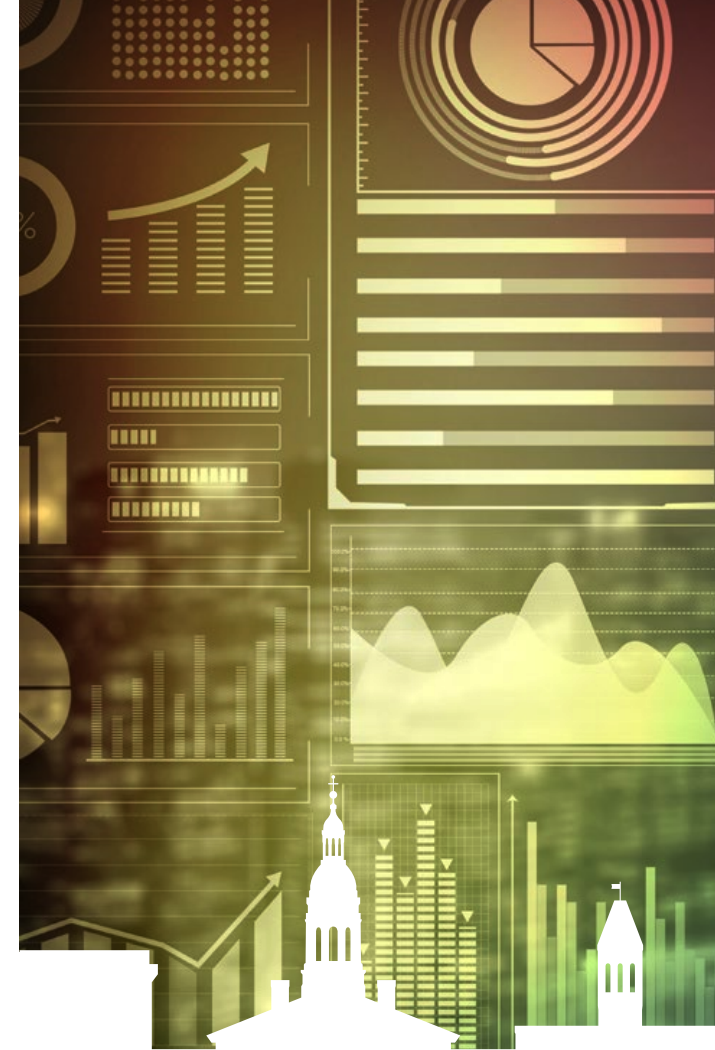
Researchers at the University of California San Diego Health found that improved digital tools allowed them to easily tweak an image recognition model that they had previously developed using machine learning to identify pneumonia in X-rays. That technique was important in the early days of Covid-19 because pneumonia was a major symptom of a severe infection.

Researchers quickly revised the system so that it could input X-rays from clinics, run the model, and then return the results to help with diagnosis. In the first six months they used the model, they processed more than 65,000 X-rays, taking about 3 to 4 minutes each, with 86 percent accuracy, said Michael Hogarth, chief clinical research information officer for UC San Diego Health.

A [paper published](#) by the *Journal of the American College of Emergency Physicians Open* found that this model had an effect on clinical decision-making 20 percent of the time. “You don't have too many things in medicine where a piece of software changes medical decision-making one out of five times, Hogarth said. “At the end of the day, it's fine to do all that fancy stuff, but if it doesn't change the medical decision for the better then who cares.”

A FINAL WORD

In the end, higher education is a human-centered enterprise. So the argument has always been that technology can go only so far to transform the underlying business model. But these examples of digital transformation show that change is enabled by technology but still has people at the core. Technology offers educators, as well as researchers, a new level of insight, providing powerful opportunities to refine and improve their courses and research and to ultimately engage more effectively with students and their research subjects at the human level.



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