The Digital Campus

Obstacles and Opportunities in Tech Transformation

THE CHRONICLE
OF HIGHER EDUCATION®

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Before the Covid-19 pandemic, most colleges and universities were working to adopt digital tools to support teaching, learning, research, and business operations. By forcing many institutions to switch quickly to online learning and remote work, the pandemic may have accelerated efforts to develop what might be called a "digital ecosystem." But the pandemic also highlighted the tension on many campuses between balancing immediate and short-term needs for technology with realizing the full value of a more strategic approach to building out digital capabilities.

To better understand some of those issues, *The Chronicle of Higher Education* surveyed 855 administrative leaders, faculty members, and technology officers at two- and four-year colleges in the United States in late May and early June 2021. This report summarizes those findings and also includes interviews with key college leaders and national experts in technology.

The survey explored three broad areas: processes for and barriers to institutional progress in developing and executing a strategy for digital transformation; how institutions establish priorities for investment in the digital campus; and how institutions are dealing with the "digital divide" that impedes access to technologies by some learners.

Respondents indicated that staff and faculty members in higher education are working to develop their own skill sets in technology, and that additional training is a continuing need. In the wake of the pandemic, institutions are acutely aware that they must do more to make educational technology more uniformly accessible to all learners. Survey results indicated that some of the institutional-technology areas that are of pressing concern include cybersecurity, online education, the use of mobile devices, hybrid education, open educational resources, cloud computing, learning analytics, and adaptive courseware. Respondents said adequate funding is a key stumbling block in institutional progress toward building a digital campus, as are such typical institutional divisions as the one between administrative and faculty interests.

Building the Digital Ecosystem

How can institutions develop and execute an effective strategy for digital transformation? What needs to be included in such strategies?

Setting Priorities for Spending

How are institutions setting priorities, developing consensus, and making decisions about spending on digital technology? How does institutional budgeting and spending align with goals for building the digital campus and with an institution's broader goals?
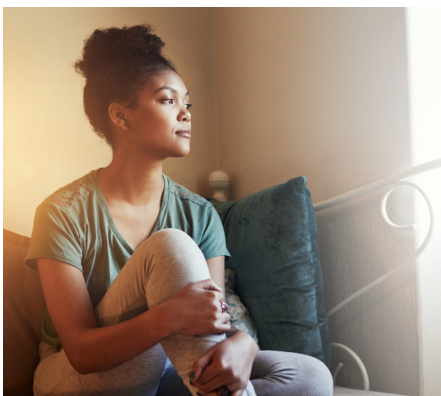
Ensuring Equity in Access

How are institutions closing the "digital divide" that impedes access to digital technologies for some learners?

The Covid-19 pandemic accelerated the work at many colleges and universities to customize their own version of the "digital campus." That work encompassed efforts to expand online education, in terms of both reaching more students and enriching teaching and learning through more robust use of digital tools.

Another dimension of the digital campus is the use of technology to improve the delivery of student-support services, including those that help students succeed academically. Many higher-education institutions have also started to make deeper use of technology in business operations, including relying on data collection and analytics to help inform decision making. For some institutions, the vision of a digital campus also means increased use of technology to communicate with potential students, institutional funders, alumni, and other important stakeholders.

The evolution in the development of the digital campus speaks to a larger, overarching trend. Adoption of digital tools has evolved beyond one-off decisions about particular technologies made at the operational level to become a key consideration in the development and execution of institutional strategy. Today, decisions about technology are often made by top leaders at the institutional level. Those decisions follow collaborative discussions across departments that previously would probably have decided about their technology needs solely by themselves. Developing and supporting a robust digital campus has become essential for meeting student, faculty, and staff needs for strong technological tools. Having a robust digital campus has now become an indispensable component of an institution's capacity to meet its goals and deliver on its mission.

Educause, an association focused on higher ed's technology needs, said in a report that predated the pandemic that "trends and changes in technology are revolutionizing everything from digital architectures to how campus leaders interact with the IT organization, creating unprecedented opportunities and raising expectations for competitive new business models, improved student outcomes, innovative teaching and learning methods, and groundbreaking research capabilities." Educause said that digital transformation requires members of the institutional community to "collaborate across silos with a shared commitment to change management and the development of the agility and flexibility needed to meet quickly changing demands."

D. Christopher Brooks, director of research at Educause, says the kind of transformation needed in colleges is a "complicated torque of things" that encompasses a

campus's culture and work force as well as its technology. "You have to change people's attitudes and minds about how they think about technology, about how they approach using it, and about how they approach working with one another," he says. Recent Educause research shows that just 13 percent of colleges are now engaged in what might be labeled a strategic approach to digital transformation, while nearly a third (32 percent) are developing a transformation strategy and an additional 38 percent are exploring doing so.

TACTICS VERSUS STRATEGIES

The pandemic highlighted some of the tensions involved as colleges work to deepen their use of digital tools. When many institutions sent students, instructors, and staff members home in the spring of 2020, they had to make immediate decisions about what technological tools they needed to best support online learning and remote work.

Decision making then was necessarily more tactical than strategic. In light of the pressure to switch quickly to a more fully or even exclusively online presence, institutions did not have the time to engage in the kind of longer discussions about what technologies they needed that they might otherwise have had.

Margaret Annunziata sees those tensions firsthand as president of Isothermal

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Community College, just as she saw them in her previous position, as vice president for academic affairs at Davidson County Community College. (Both institutions are in North Carolina.) As a result of the pandemic, she says, college administrators were forced into making shorter-term decisions. "It was about not just how are we looking into the future and preparing for it, but about what are we doing today?" she says.

In the midst of making sure that learning continued for students during the pandemic, Annunziata says, "we didn't have the luxury of time to stop and go back to the strategic plan and think about that." Instead, she says, the focus had to be on "how will this best serve our students and is this the right tool that will allow us to do that — but with a little bit more urgency around making decisions."

Building the Digital Ecosystem

One overarching effect of the early days of the pandemic was that it forced many, and possibly most, colleges into a reactive mode. At the same time, the vast switch to online learning and remote work also underscored how vital it is that colleges define an overarching vision for how technology can best advance their missions. In general terms, the task is to frame and pursue an institutional strategy for building and supporting what might be called a digital ecosystem. Institutions vary in how far along they are in realizing that goal. For many colleges, making further progress may require approaching it with more intention, different skill sets, and different work processes across campus.

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Kenneth C. (Casey) Green, founding director of the Campus Computing Project, the largest continuing study of the role of computing, e-learning, and information technology in American higher education, says that before the pandemic, the extent to which the notion of a digital campus had taken hold in higher education could be characterized largely as "ever arriving and not yet here." Before Covid-19 changed the world, he says, some campuses were being strategic in their vision of a digital campus.

The progress of other institutions, he says, could be characterized as "opportunistic" or "transactional."

Green says the pandemic was a "wrecking ball" that forced all institutions to recognize that they had to get very serious about their digital strategies. "There is no question that Covid-19 was a huge accelerator for almost all institutions in one way or another," he says. "You could not not respond to it. You had to address it. And the question became, how quickly and how well?"

Indeed, the pandemic may have helped some institutions assess how well their digital strategies were working, including rolling out a robust learning-management system, or LMS. "While institutions may be trying to be strategic in their planning, the change driving the need for a digital campus often outpaces the ability of institutions to plan and implement initiatives proactively," Lori Werth, provost of the University of Pikeville, in Kentucky, says by email.

"Perhaps no greater example of this is the pivot institutions had to make in relation to Covid-19," she says. "While a global pandemic couldn't be predicted, institutions that had begun to advance plans related to building a digital campus — including having an effective LMS, digital collaboration tools, faculty training, and IT support — were in a much better position to pivot."

An institutional strategy for the digital campus is "not just buying a new piece of software and implementing it," Educause's Brooks says. "It's how does that purchase fit into the larger strategic set of goals and the mission of the institution writ large?" One way to get buy-in for that larger vision and to "get people to the point of appreciating what a digital campus may look like and entail," he says, is to build better awareness across campus about the value and benefits of technology upgrades. That process, he suggests, is "simultaneously linear as well as recursive. You take two steps forward in terms of purchasing a suite of things to accomplish a particular goal, and you take a step back to think about the next things. And by the time you get that next one resolved, you might have to revisit some of the first things."

UNDERSTANDING TECH

The *Chronicle* survey asked respondents about the extent to which they believe their role requires more understanding of technology than it did before the pandemic. Among faculty members, 91 percent either agreed or somewhat agreed with that premise; among college leaders and administrators, the number was 88 percent. Nearly three-quarters of technology officers (69 percent) felt the same way. Asked where they had to learn more, respondents cited a wide range of specific needs. ("Where haven't we" had to learn new technologies? one faculty member observed.)

Many faculty members, not surprisingly, said they needed to get up to speed on delivering course content and communicating with students online. Administrators and technology officers said they needed to know more about how to use platforms for teamwork such as Zoom. More broadly, several administrators said they had intentionally sought to learn

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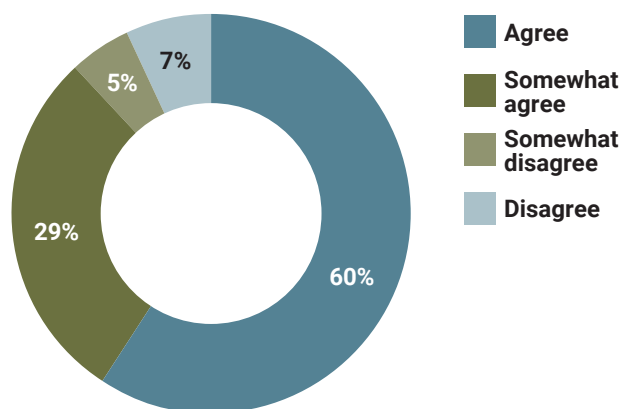
- Agree — 60%
- Somewhat agree — 29%
- Somewhat disagree — 5%
- Disagree — 7%

Note: Percentages add up to more than 100 percent due to rounding.
Source: *Chronicle* survey of 855 senior administrators and faculty members.

more about all the technologies in use at their institutions in order to better know how to support faculty, staff, and learners. Just over half of respondents (51 percent) said that better training of faculty members in the use of educational technologies would help their institutions better serve students.

The *Chronicle* survey also shed light on some barriers at many colleges to developing and adopting a strategy for a digital campus. Not surprisingly, 53 percent of all respondents said budget constraints were an "extreme" barrier. Reaching consensus about "the strategic importance of technology or which technologies to use" was viewed as a "moderate" barrier by 39 percent of respondents, while 20 percent reported it as an "extreme" barrier. College leaders, faculty members, and technology officers all agreed that faculty reluctance to adopt new technologies was either "somewhat" of a barrier (37 percent) or a "moderate" barrier (38 percent). Staff reluctance was seen as a slightly more significant barrier (44 percent of all respondents said it was "somewhat" of a barrier). By contrast, 52 percent of respondents said that student reluctance to adopt new technology was not a barrier.

Asked about such concerns as institutional infrastructure, training, and how institutions could measure the efficacy of their investments in technology,

Barriers to Making Technology Improvements

Portion of respondents who identified an issue as being an "extreme" barrier.
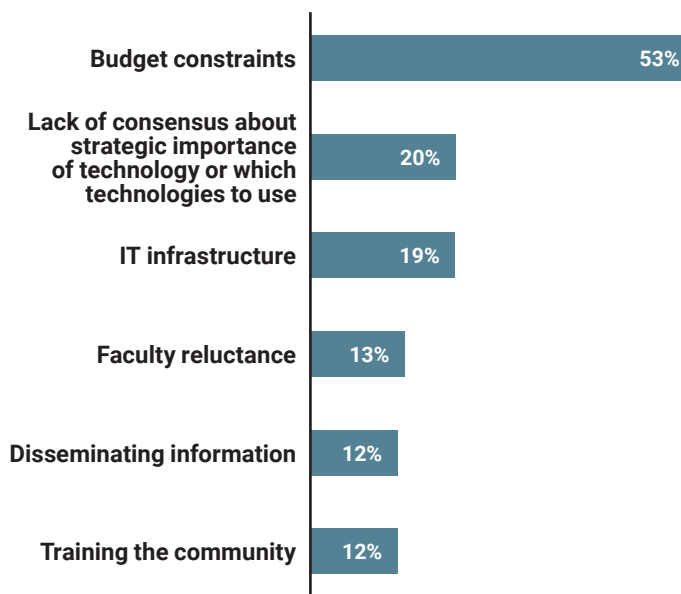
Note: Respondents were asked to choose from a list of 11 potential barriers. These responses represent the top six responses
Source: *Chronicle* survey

respondents generally said those factors constituted either "somewhat" of a barrier or a "moderate" barrier. When asked to name other concerns not on the survey, respondents were voluble. Among many other issues, faculty members said that the pressures of time and workload had impeded progress toward a digital campus, as did "uncertainty about what will be required to support students" and, in some regions, access to Wi-Fi. Administrators mentioned the lack of clarity about technology governance, the lack of strategic vision from institutional leaders, and higher education's reluctance to embrace change. Some concerns among institutional technologists centered on issues of data privacy, compliance, and cybersecurity.
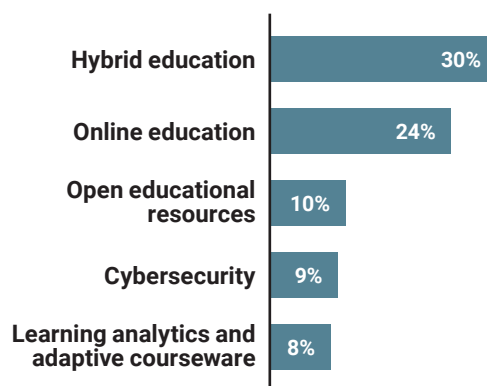
Setting Priorities for Spending

I n an era of budget constraints, institutions must pay careful attention to their decisions about spending on technology. Competing demands from different campus interests compound that challenge.

The *Chronicle* survey asked respondents to rank the relative importance of different investments in technology or "tech-infused approaches" to the college's future success. Top priorities, cited as "somewhat" or "very" important by more than 90 percent of those surveyed, included cybersecurity, online education, and mobile devices.

Which of these are most important to the future success of your institution?

Hybrid education	30%
Online education	24%
Open educational resources	10%
Cybersecurity	9%
Learning analytics and adaptive courseware	8%

Note: Respondents were asked to choose from a list of 14 technologies or digital priorities. These responses represent the top five responses.

Source: *Chronicle* survey of 855 senior administrators and faculty members.

Almost as highly ranked (more than 80 percent of respondents) were hybrid education, open educational resources, cloud computing, learning analytics, and adaptive courseware. More than half of respondents rated predictive analytics, facilities automation, and artificial intelligence as "somewhat" or "very" important.

The survey asked whether staff members and administrators agreed about where investments in technology should be focused. Seventy percent of respondents said there was no such agreement at their institutions. The reasons why differed to some extent by campus role. Several administrators said budget restraints impeded building consensus on spending. Several technology officers suggested that institutional needs for spending on cybersecurity undercut spending on academic technology. More broadly, respondents said their institution lacked the right processes for productive conversations about the most effective ways to spend money on technology.

The survey also asked whether faculty members and administrators agreed about investments. Perhaps not surprisingly, many respondents said no: 80 percent of faculty members said there was no such consensus on their campus, a sentiment also felt by 58 percent of college leaders and administrators and 43 percent of technology officers. In open comments, respondents cited numerous reasons for the divide. One administrator suggested that campus users of technology were too focused on

> **A majority of faculty members said their campuses lacked a consensus about where to make technology investments.**

> **"We have to look at how we make learning experiences meaningful and relevant, and use tools that add value to that process by increasing access to educational opportunities and success that the student can achieve as a result of those tools."**

their own needs versus those of learners over all. Some faculty members said they did not have an adequate voice in budget decisions. Several respondents said that different campus constituencies found it difficult to agree on anything, and that technology was just one issue on which differences of opinion were rife.

BUILDING CAMPUS CONSENSUS

So how do institutions make decisions — and, ideally, reach some semblance of consensus — about how they should invest in technology?

As vice president for technology at the Foothill-De Anza Community College District and director of the California Community Colleges Online Education Initiative, Joseph Moreau knows a thing or two about building consensus around technology. Part of the initiative's strategy, he says, has been to "develop an online ecosystem based in the learning-management system." The statewide effort contracted with

a course-management company and, within 30 months, won 100-percent adoption of that tool by some 116 colleges. "That now forms the foundation of an ecosystem that includes tutoring, counseling and advising, proctoring, professional development for faculty and staff who support online programs, and materials to help students learn how to be online students," Moreau says.

California built a collaborative network among community-college faculty members throughout its system as a means of signaling that "we don't have to go this alone" and "we're going to serve our students better if we do this together," Moreau says. Another guidepost, he says, came from a colleague known for defusing sometimes-contentious campus debates by asking "How does it affect students?" That question came to be "absolutely at the forefront of how we made decisions," Moreau says, "and curtailed a lot of disagreement or dissension. People set aside their personal perspectives to say, 'Well, what does the student want?'" Moreau says that "having

that guiding principle always at the top of the list helped us prioritize investments."

In terms of thinking about a digital presence, Annunziata, at Davidson County Community College, also emphasizes student needs. "What I think is critical is that we are expanding access and opportunities for success through digital engagement," she says. "It's all about how we better fulfill our mission and how we serve students who otherwise are not being served or who are needing to be served differently. We have to look at how we make learning experiences meaningful and relevant, and use tools that add value to that process by increasing access to educational opportunities and success that the student can achieve as a result of those tools." Keeping students at the center of decisions about institutional investments in technology, she says, "is going to guide us in the right direction."
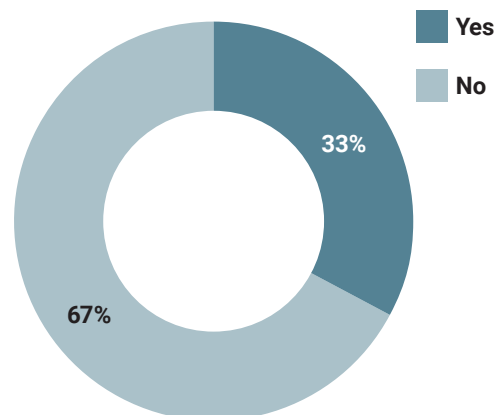
"Institutions should focus on technology to help meet particular needs, not buy technology tools for the sake of having them,"

On your campus, do staff members and administrators agree on where to invest in technology?

Yes
No

30%

70%
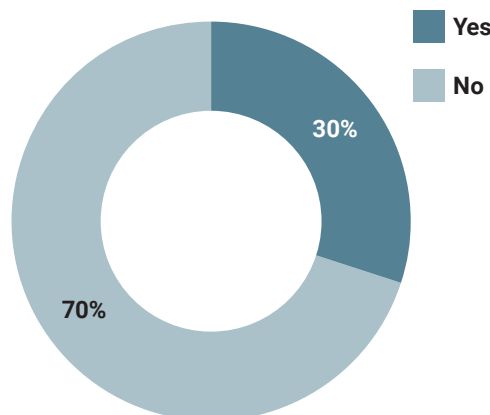
Source: *Chronicle* survey

On your campus, do faculty members and administrators agree on where to invest in technology?

Yes
No

33%

67%

says the University of Pikeville's Werth by email. "Often the needs mirror what has always been a priority, such as enhancing student-student, student-teacher, and student-content interactions. Institutions must ask themselves what they would like to see from each of these possible relationships, then evaluate digital tools for what would best help achieve these outcomes."

Cynthia Golden, associate vice provost and executive director of the University Center for Teaching and Learning at the University of Pittsburgh, has a similar perspective. "As one who leads a teaching center, I believe that the emphasis should not be on the 'digital campus' so much as on the student/faculty experience, and how digital tools can make that better," Golden says by email. "For many years, those in technology have been seen as the 'money pit' rather than as the enablers of bigger things. The emphasis on our campuses should be on teaching and learning."

Training is also essential, including helping users to master existing tools. "While continuing to transform the infrastructure at the university to be more digital in order to support improving student success is important, far too often there is not enough emphasis on helping faculty and students effectively utilize what technology they already have," James Ptaszynski, vice president of the digital-learning division of academic affairs at the University of North Carolina system, says by email.

Ptaszynski suggests that the impact of Covid-19 pushed some short-term needs to the top of priority lists. "The recent pandemic made us scramble to adapt to a more digital environment — and plug some holes around access — but overall it really came down not to more technology but how to use what we already had," he writes. "While I can very much appreciate the need for

thoughtful planning of technology adoption, the more critical areas for me have been the need for training, organizational development, and a focus on changing the campus academic culture."

> "The recent pandemic made us scramble to adapt to a more digital environment — and plug some holes around access — but overall it really came down not to more technology but how to use what we already had."

Yet another approach to building consensus toward a digital-campus strategy might come from strong internal structures. Mario Berry, vice president for IT at Texas Southern University, says a centralized process for technology governance helps his institution make decisions about technology investments that link directly to its strategic plan and goals for student success. Moreover, he says, the governance process helps the university view technology not just from a budgetary perspective but also in light of such considerations as compliance and cybersecurity. The technology-governance committee includes representatives of faculty, staff, and students across the university, Berry says, as well as four vice presidents (including Berry) who report monthly to the institution's president and other vice presidents.

Ensuring Equity in Access

Part of building a digital campus is making sure that it serves every learner. The pandemic emphasized the divisions between students who do and who do not have adequate access to the technological tools they need to succeed in online learning. To help close that gap during the pandemic, many colleges distributed computers and created hot spots to help students with inadequate access to technology stay connected for remote learning. Experiences with short-term fixes like that highlighted the need for more systemic strategies to bridge the digital divide.

One study of higher education during the pandemic, by the Midwestern Higher Education Compact, found that up to 19 percent of college students said technological barriers like inadequate computer hardware or poor internet connections had inhibited their participation in online learning. That research found higher rates of "technology inadequacy" among lower-income students versus their higher-income peers, among Black and Hispanic students versus white learners, and among rural students versus urban students.

Those gaps are part of a broader divide that permeates society. Research in early 2021 by the Pew Research Center showed that a quarter of adults with annual household incomes below $30,000 (24 percent) do not own a smartphone. Pew also found that 43 percent of adults with lower incomes do not have home broadband services; 41 percent do not have a desktop or laptop computer. By contrast, Pew notes, "each of these technologies is nearly ubiquitous" among adults in households that earn $100,000 or more a year.

> "The pandemic laid bare for many folks in higher education about where these digital divides reside, and maybe some of the structural things that produce those kinds of inequities."

Those kinds of concerns are very real at the institutions *The Chronicle* surveyed. Forty-six percent of respondents to the *Chronicle* survey said they agreed that "my institution is concerned that students' lack of stable internet access or access to laptops or other devices will hurt their education." An additional 36 percent said they "agree somewhat" with that assertion. Recognizing that issues of access to educational technology sometimes apply disproportionately to underrepresented groups, *The Chronicle* asked whether those surveyed thought that "Improving our campus technology will help close achievement gaps between white students and students of color." Sixty-six percent of respondents either agreed or somewhat agreed with that statement.

"The pandemic laid bare for many folks in higher education about where these digital divides reside, and maybe some of the structural things that produce those kinds of inequities," Educause's Brooks notes. "They were confronted very seriously with having to support students of various means and various socioeconomic backgrounds in order to be able to keep them enrolled, engaged, and on the path to earning their degree. It became pretty clear that while a lot of students are actually in pretty good shape, there's a sliver of them that aren't."

How big that sliver of students might be varies greatly. Isothermal Community College, for example, serves learners in the foothills of western North Carolina. "Broadband access in this service area is certainly a consideration," Annunziata, its president, says. "Even some of our most affluent residents in the community may not have

Improving campus technology will help close achievement gaps between white students and students of color?

- Agree: 28%
- Somewhat agree: 38%
- Somewhat disagree: 21%
- Disagree: 14%
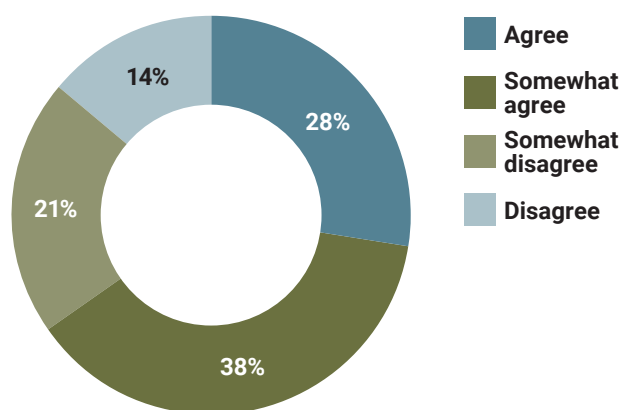
Note: Percentages add up to more than 100 percent due to rounding.
Source: *Chronicle* survey of 855 senior administrators and faculty members.

Do you think high-school students will now expect colleges to have better technological capabilities than they do today?

- Yes: 92%
- No: 8%
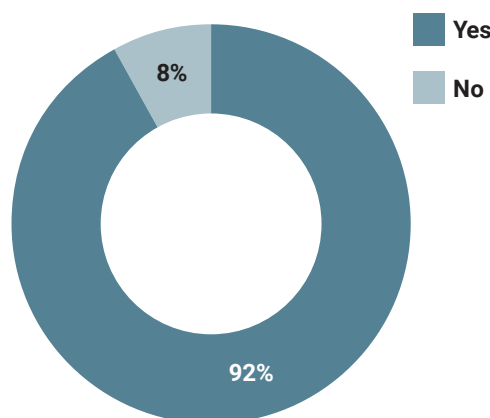
Source: *Chronicle* survey

access to broadband technology because of where they reside." While she says that the college provided support such as hot spots to students during the pandemic, it also recognizes that such fixes "aren't going to work if there's no service in the area where the student lives."

Annunziata also notes that local students have built-in technology-support systems while they are in elementary and secondary school, such as transportation to a place that has internet access, but that such support evaporates for college students.

"Institutions must make the effort to understand their students and their unique needs when it comes to digital learning," Pikeville's Werth says by email. "It can be easy to assume that students have access to digital tools as well as understand how to use these to be successful in class. We should be asking our students what access they have to computers and the internet when not on campus, how they access and complete course assignments, and what is happening in their lives, other than

"Institutions must make the effort to understand their students and their unique needs when it comes to digital learning."

attending class, that may impact their ability to succeed and graduate."

Werth urges that such "student-centric thinking" be part of the academic culture "from top to bottom." Decisions about the use of technology should be based on how they will affect student success and experience, she says, and once student needs are uncovered, institutions should be proactive in setting budget priorities to help close identified gaps.

Data, too, might help institutions make decisions about bridging the digital divide. In the California community colleges, for example, Moreau says that "one of the ways that we look to prioritize investment from an equity standpoint is to make sure that we've got the best data around the equity or the characteristics that influence or impact equity from a student standpoint, so that we can make sound decisions not based on what we think students want but based on what the data tells us they want or need."

"My institution is concerned that students' lack of stable internet access or access to laptops or other devices will hurt their education."

- **Agree** 46%
- **Somewhat agree** 36%
- **Somewhat disagree** 13%
- **Disagree** 5%
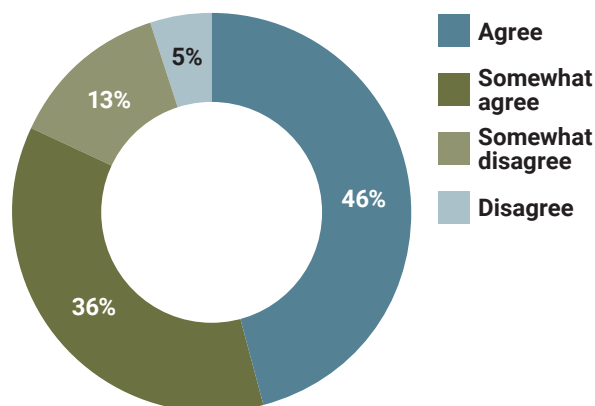
Source: *Chronicle* survey

t seems a foregone assumption that technology will continue to be an integral component of how colleges fulfill their missions. Indeed, the role of technology is likely to expand, perhaps significantly. Within that context, many, and perhaps most, institutions will continue in the near term to work avidly to customize their own versions of the "digital campus."

Experts have some specific advice to realize that goal. "First, just take a deep breath," says Green, of the Campus Computing Project. "You can't do everything. So I think triage in terms of priorities becomes an organizing principle. Build coalitions in the process of setting priorities so you don't have partisan divides by departments or platforms. Engage senior leadership."

Texas Southern's Berry urges institutions to "continue to focus on the acceleration and adoption of technology" and says that "if you have not done so, align it to your strategic plan." Further, he says, "make sure that you collaborate across your institution and make decisions [about technology] through an inclusive process." Echoing that, Annunziata notes that a vital part of the process of selecting the right technologies is to engage in discussions with faculty, staff, and students to understand their respective needs for digital tools.

The most important operative principle may well be to keep the focus on students. At Isothermal Community College, for example, Annunziata says she and her colleagues work to "make sure that we're investing in tools that allow us to provide a robust and seamless experience for students," particularly those who engage from a distance. To help ensure that her institution provides a full student experience in the digital space for all learners, Annunziata says, it's important to focus on what it is like to be a student. "What are the things that keep students engaged, and motivated, and moving forward, and how do we provide for that?" she says. "We have to strive to select tools that actually meet our students' needs instead of trying to shoehorn their needs into a particular tool."

FURTHER READING

"[Driving Digital Transformation in Higher Education](#)," by D. Christopher Brooks and Mark McCormack, Educause, June 15, 2020.

"[For Digital Transformation Success, Start With a Digital Strategy That Advances the University Mission](#)," by Anushka Mehta, EAB, June 18, 2020.

"[Reimagining Higher Education in the United States](#)," by André Dua, Jonathan Law, Ted Rounsaville, and Nadia Viswanath, McKinsey, October 26, 2020.

"[The Unequal Costs of the Digital Divide](#)," by Audrey Williams June, *The Chronicle of Higher Education*, October 5, 2020.