Bridging the Digital Divide: Lessons From COVID-19

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INSIDE HIGHER ED

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The digital divide, digital equity and digital accessibility are not new concerns in higher education, but the COVID-19 pandemic has forced many institutions to confront these issues head-on for the first time.

When colleges pivoted to remote learning in the spring semester of 2020, access to campus computer labs and Wi-Fi networks was restricted, exposing social and economic disparity among students, and hampering students who already faced greater barriers to completing academic programs than their peers.

This report highlights cutting-edge strategies employed by institutions to promote student success in the short term. It also shares advice from online learning experts, administrators, instructors and students for long-term changes in policy, practice and pedagogy.

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equity and access.

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Introduction

The COVID-19 pandemic undoubtedly created unforeseen challenges for colleges, but it also highlighted and exacerbated existing inequities in the higher education ecosystem.

When college leaders sent students home in the spring semester of 2020 to continue their studies remotely, many campus-based support systems and resources intended to level the playing field for students from different socioeconomic and educational backgrounds became inaccessible.

With campuses closed and social distancing measures in place, students who relied on campus computers and free Wi-Fi networks to complete their academic work were left in a lurch.

Even off-campus, public access to the internet was limited. Public libraries closed and coffee shops and restaurants switched to take-out only -- forcing some students to search for Wi-Fi-enabled parking lots where they could study from their cars.

Though many students own laptops or smartphones, not all students have the funds to maintain these devices or pay for high-speed internet -- especially at a time when millions of Americans have lost jobs and wages and may be experiencing financial difficulties.

Emerging enrollment data reinforced concerns from higher education experts that digital access, or the lack of it, appears to be playing a role in many lower-income students' decisions to leave college or abandon plans to pursue a degree.

There have always been haves and have-nots among students, but the difference now is that colleges can no longer ignore this issue, said Jessica Rowland Williams, director of Every Learner Everywhere, a network that helps higher education institutions implement innovative teaching and learning practices, with a particular focus on increasing the success of underserved students.

"The pressure is on higher education institutions to find solutions because students are dropping out of school, and that is hurting their bottom line," said Williams. "There is a push to address technology access and wider socioeconomic problems more strategically and urgently."

While the full impact of the pandemic on college enrollment numbers is not yet clear, experimental data from the U.S. Census Bureau's Household Pulse Survey

suggests that millions of people who were intending to take a college class in the fall semester canceled their plans. Data from the National Student Clearinghouse Research Center also paint a troubling picture.

"As the fall semester comes to a close, the impact of the pandemic seems to be disproportionately affecting disadvantaged students by keeping them out of college," Doug Shapiro, executive director of the National Student Clearinghouse Research Center, said in a news release in December 2020.

Overall postsecondary enrollments declined by 2.5 percent in fall 2020, nearly twice the rate of enrollment decline reported the previous fall, according to the Clearinghouse. Undergraduate enrollment was the primary driver of this decline, decreasing by 3.6 percent or over 560,000 students from 2019. Combined enrollment at public two-year and four-year institutions declined this fall by 4 percent, just under 530,000 students, mainly due to decreased enrollment at community colleges.

"Looking through the additional lens of 2020 high school graduates, we observe an even sharper picture, as the immediate college enrollments of those from high-poverty, low income and urban high schools have been hit the hardest," said Shapiro. "The enrollment gaps appear to be widening because of COVID-19 and the recession."

There is no doubt that students from low-income backgrounds, first-generation college students and people of color are the ones who have been most hurt by the pandemic, said Williams.

"The students who were already vulnerable bore the brunt of the hit, and that extends beyond just their educational experience," said Williams. "We know, for example, that Black people were impacted more by COVID-19 than any other population in the United States."

The U.S. Congress allocated approximately $14 billion in CARES Act: Higher Education Emergency Relief Funding to U.S. colleges and universities in March 2020. A second package of $82 billion for colleges and K-12 schools was approved in December 2020, but how much will be distributed to students who have been negatively affected by COVID-19 is uncertain.

What is certain, looking forward, is that colleges and universities will have to work hard to persuade students who left college to return to their studies. Community colleges in particular will need to increase their marketing and outreach efforts to ensure that prospective students are aware of the support and opportunities available to them, Martha Parham, senior vice president of public relations for the American Association of Community Colleges, said in an interview with *Inside Higher Ed* about the Clearinghouse data.

While the possibility that a whole generation of students may decide to skip college is deeply troubling, Williams urges educators to be sensitive to the fact that many people are simply trying to get through an extremely difficult period in their lives.

"Education is a great equalizer, and does provide upward mobility," said Williams. "But if students are struggling with food and housing, if they have children and families to support, they may choose not to prioritize their education right now, and that is understandable." ∎

Broadband internet:

High-speed internet access via multiple types of technologies including fiber optics, wireless, cable, DSL and satellite. The Federal Communications Commission defines broadband as a minimum of 25 Mbps download and 3 Mbps upload speeds. (Verizon)

Chromebook:

A laptop or tablet running the Google operating system Chrome OS. Chromebooks were designed to be used online with the Google Chrome browser and apps from the Chrome Web Store. These laptops have limited storage and were designed to save user data in the cloud. (PC Mag)

Digital Divide:

The patterns of unequal access to information technology based on income, race, ethnicity, gender, age and geography. (Mossberger, et al. 2003).

Digital Equity:

A condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital equity is necessary for civic and cultural participation, employment, lifelong learning and access to essential services. (National Digital Inclusion Alliance)

Digital Inclusion:

The activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of information and communication technologies. (National Digital Inclusion Alliance)

Digital Literacy:

The ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills. (American Library Association)

Web Accessibility:

Websites, tools and technologies that are designed and developed so that people with disabilities can use them. Web accessibility encompasses all disabilities that affect access to the web, including: auditory, cognitive, neurological, physical, speech and visual. (W3C Web Accessibility Initiative) ◼

Lessons in Student Engagement

When colleges pivoted to remote instruction during the early stages of the pandemic in the U.S., student satisfaction took a nosedive.

A national survey of over 1,000 undergraduate students conducted by Digital Promise in partnership with Every Learner Everywhere and Tyton Partners, published in July 2020, found that many students struggled to stay motivated in class. Students missed receiving feedback from their instructors and collaborating with their peers.

Most students did not attribute their difficulties to poor instructor preparation or limitations inherent in online learning, but more than 20 percent of students who participated in the survey reported having technical difficulties with their internet connection, software or hardware that were serious enough to impede their participation in class.

Many conversations about the spring semester devolve into a debate over the strengths and weaknesses of face-to-face versus online instruction, but the reality is that students want the flexibility to choose between these modalities, said Williams, of Every Learner Everywhere.

"Some students are very engaged and interested in online courses, because that gives them the flexibility to work, take care of their children or balance different responsibilities," said Williams. "Some students really hate online -- they want face-to-face because they learn better in that environment."

Whether instructors teach online, in-person or a mix of the two, their focus should be on quality, said Williams. "We need to learn how to develop high-quality learning experiences for students online, and how to develop high-quality learning experiences for students face-to-face. It's not about an either/or -- it's about high-quality learning experiences in any modality."

Simple, evidence-based instructional practices that have been demonstrated to improve student satisfaction and engagement can be incorporated into online or in-person teaching, said Williams.

The top three practices that most increased student satisfaction in the Digital Promise survey were: personal messages from instructors checking on student progress, the use of real-world examples to illustrate course content, and assignments that asked students

to reflect on what they have already learned and still need to learn.

Communicating with students and keeping them engaged in their studies should be a top priority for instructors right now, said Williams, citing recent anecdotes about many students who attended class virtually for a few weeks and then disappeared.

"We need to home in on what is happening to those students, where they are and why they are no longer showing up to class," she said. "Have they stopped coming to one specific class or have they stopped coming to all of their classes? That might indicate something more significant is going on."

Students who study remotely, particularly first-year students, are struggling to form strong bonds with faculty members and their peers. "Research has shown that connections and mentorship are important for early academic success, particularly for minority students," said Williams. "Institutions need to focus on building one-on-one connections between students and faculty, and encourage peer-to-peer connections."

Students also reported feeling disconnected from their institutions. "The reality is there were a lot of minority students who felt that way long before COVID," said Williams.

"At predominantly white institutions there are pockets of minority students who might feel very isolated, even while sitting in a classroom or at a football game," she said. "The pandemic presents a unique opportunity for institutions to really look at this problem as community building and think of more strategic ways to build inclusive spaces for students."

An *Inside Higher Ed* survey of college presidents, published in March 2020, found widespread concern about maintaining student engagement in online or remote classes, with 81 percent of respondents identifying this issue as "very challenging" or "somewhat challenging."

Institutions do not need to reinvent the wheel to keep students engaged remotely, Jennifer Latino, senior principal strategic consultant at Ellucian, wrote in a blog post. "Many of your current strategies will work -- they just need to be adapted to a world in which many students will not be living on campus or attending classes in person," she said.

Many institutions are already using a "personal touch" when communicating with students through techniques such as personalized messaging and advising groups led by peers with common interests. But it's important for instructors to step up and foster a personal connection with students, said Latino.

"In this new era, faculty will be the vanguard to help advance messaging of the institution -- and it's vital that they communicate that the institution cares and will continue to value students as people, while also providing a high-quality education," she said. ∎

The New Digital Divide

FRESHSPLASH/GETTY IMAGES

A [2018 EDUCAUSE Center for Analysis and Research](#) survey of 64,536 college students, from 130 institutions in 9 countries and 36 U.S. states, found that 91 percent of students had access to a laptop, and 95 percent had access to a smartphone.

While most survey respondents said they owned these devices, a small percentage said they share them with family members and friends, or in the case of laptops, borrow them from their institution. Less than 1 percent of survey respondents said they had no access to a laptop, desktop or smartphone.

Looking at these data, it would be reasonable to conclude that the digital divide is no longer much of a divide at all. But while access to devices is now almost ubiquitous, many academics argue the divide is alive and well.

"The digital divide on college campuses has shifted from one of technology access to one of technology maintenance," Jessica Calarco, assistant professor of sociology at Indiana University at Bloomington, wrote in [a 2018 blog post](#) describing the "new digital divide" on college campuses.

In her introduction to sociology course, almost all of Calarco's students have smartphones, tablets or laptops. But not all of these devices are in good working order, she told *Inside Higher Ed*.

A [survey of college students](#) at a large unnamed university, co-authored by Calarco, found large gaps in the quality and reliability of the devices that students own. The survey also found that students of color and students from low-income families were more likely to rely on older, lower-quality devices.

Students painstakingly type out papers on laptops with missing keys, live in off-campus housing with no access to the internet and run out of data on their cell-phone plans midway through the month, the survey found. In Calarco's own classes, she said students often sit on the floor to be close to one of the limited plug sockets in the room since their laptop batteries no longer hold any charge.

For low-income students, a broken laptop or lost cell phone represents a serious barrier to success since they can't just ask their parents for a new one. Even for students with jobs, it can take months for students to save up enough money to replace devices on their own, wrote Calarco.

It can be difficult for students to ask for help, she said, and there is a stigma around borrowing equipment. Calarco supports institutions providing free devices to all students, but recognizes that not every college will have the funds to do this.

Calarco includes a statement on digital access and equity in her course syllabus. The statement encourages students to come forward if they experience any technical difficulties, and also provides a list of technology resources the university provides.

Acknowledging up front the challenges that students are facing, and leading with empathy, are tenets that also shaped Calarco's response to the pandemic. In April 2020, she shared a teaching statement she sent her students that outlined changes to the course and grading, while emphasizing that students should be kind to themselves.

"If you are at all concerned about your ability to complete the work for this course, please let me know," wrote Calarco. "I am happy to work with you to develop an individualized plan that accommodates your needs and challenges you face." ∎

Meeting Students Where They Are

Christopher Ali, associate professor at the University of Virginia and faculty fellow at the Benton Institute for Broadband & Society, was worried when his university announced in March 2020 that it would move to online learning.

As an academic interested in broadband, Ali had often talked to students about the level of internet connectivity they had in their homes, and knew many did not have more than satellite internet access at home, a medium that is incapable of delivering the high performance broadband needed to stream video or participate in a two-way Zoom conversation.

"I worried we would uncritically transition to a synchronous Zoom model, where classes would be held over video at the same time as their offline iterations," wrote Ali in a blog post for the Benton Institute. "Luckily, professors were given the flexibility to transition their courses as we saw fit."

Before redesigning his courses, Ali sent a survey to his students asking about broadband capabilities where they live. The survey starts by asking students "Are you safe and sound where you are?" then launches into a series of questions about whether their internet connection is good enough to allow them to stream a YouTube video, download a PDF or hold a two-way conversation with or without video.

The survey also asked students which devices they would use most to access class materials, and asked their preference for synchronous or asynchronous instruction.

"My job, then as it is now, and will always be, was to meet my students where they are," said Ali. In response to the survey responses, Ali developed a hybrid course where he would pre-record a lecture through PowerPoint and post it to the class webpage at the start of the week, so that students could download the video when convenient.

He also held a text-based chat session (similar to 1990s-era AOL instant messenger) on Wednesdays during regular class time. "Both of these activities respect my students' broadband limitations but do not surrender the material or learning outcomes," he said.

In the absence of universal high-performance broadband, Ali and a wide range of experts said institutions have a duty to understand their students' technology limitations and adapt classes accordingly. ∎
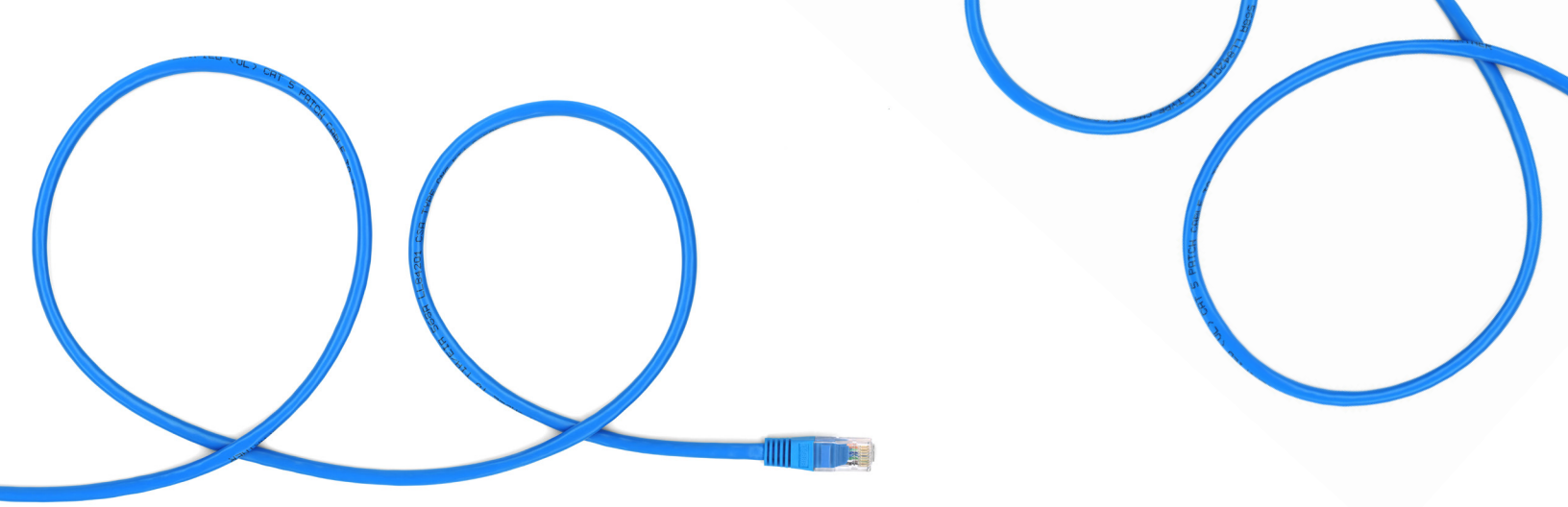
More Tech Isn't Always the Answer

In a memorable keynote at the SXSWedu conference in 2017, Christopher Emdin, associate professor of science education at Teachers College of Columbia University and creator of the #HipHopEd social media movement, told an audience of ed-tech entrepreneurs and executives that the U.S. higher education system has injustices that they cannot "tech away."

It was a speech that stuck with Youngmoo Kim, professor of electrical and computer engineering and director of the Expressive and Creative Interaction Technologies (ExCITe) Center at Drexel University. People who work in Silicon Valley aren't used to hearing that there are problems technology can't solve, said Kim.

"When we talk about the digital divide and digital equity, we think it's all about tech, but it's not," said Kim. "It's not a problem that requires a technical solution. It's actually a much broader societal and civic and cultural problem."

Even in large cities such as Philadelphia, where Drexel is located, many people aren't connected to the internet because they can't afford it, said Kim. Not all students have stable housing, and even those who do might forgo a home internet connection to save some money.

Many students rely instead on free Wi-Fi networks or limited data plans on their mobile phones, Kim said. "I don't have a lot of patience for people in higher ed who say, 'Oh, if only we had 5G, or Chromebooks, or piece of tech XYZ,' our problems would be solved," said Kim.

Twenty years ago the fact that one day almost all students might have internet-connected devices in their pockets with supercomputing power seemed like a fantastical dream. Now that dream is a reality, but "we still have as much disparity as we ever did," he said. "Tech isn't the solution to this, it's actually part of the problem."

In Philadelphia, attempts to address the digital divide in response to the pandemic have been "disappointing, and sometimes laughable," said Kim.

The Philadelphia School District raised enough money to buy tens of thousands of laptops for K-12 students in spring 2020 with the help of a $5 million donation from Brian Roberts, the CEO of Comcast. This fund-raising effort was admirable — but not well thought-out, said Kim. The Chromebooks the school district bought rely on cloud storage more than regular laptops do, and are thus "not very helpful without an internet connection," he said.

The infrastructure to support remote learning on these devices was also lacking, said Kim. "You can't just give somebody a device and magically they start learning. There was no curriculum, there was no teacher training to support online learning," he said.

In the summer of 2020, Philadelphia launched an initiative called PHLConnectED to help households with K-12 students connect to the internet with two years of Comcast's free Internet Essentials service. But many families who are eligible for the service still don't know about it, said Kim.

A companion effort called Digital Navigator, which Drexel's ExCITe Center supported, set up IT helplines local residents could call for assistance getting online and using technology in general. Drexel students helped to staff the helplines, said Kim.

A lot of information about how to get online is … online, making it inaccessible to people who aren't already connected, said Kim. A number that anyone can call or text for tech support is much more inclusive, he said.

Even when people learn about internet initiatives such as PHLConnectED, they don't necessarily know how to take advantage of them, said Kim. And many people are concerned about contacting internet providers if they have unpaid bills.

"People think they're going to get in trouble. That is not the case with this program, if you have a pre-existing debt, it doesn't count," he said. "But still, nobody wants to call up Comcast if they're getting collection notices from Comcast." ∎

Broadband Limitations

Much discussion around the digital divide centers on K-12 education. But higher education faces many of the same challenges, said Amina Fazlullah, policy counsel at Common Sense Media, a nonprofit organization that aims to help families make smart media and technology choices.

In K-12 the digital divide is often framed as the "homework gap," but Fazlullah said COVID-19 forced some students to do all of their learning from home -- exacerbating existing inequalities and opening up the possibility for students to fall seriously behind in their studies.

A recent Common Sense Media report estimated that between 15 and 16 million K-12 public school students, or approximately 30 percent of all K-12 public school students, live in households that are either without an internet connection or a device adequate for distance learning at home. Approximately nine million of these students have neither adequate internet connection nor devices for distance learning.

The report found the digital divide is prevalent in every state and every type of community, but inequities are more pronounced in rural communities and in Black, Latinx and Native American households.

The picture for college students returning to their family homes to study online is likely similar to that for K-12,

with the potential for added pressure. "There's a lot of responsibility resting on older kids to help their younger siblings navigate online learning, particularly if their parents are out working all day," said Fazlullah.

If siblings are sharing devices or splitting limited bandwidth, older siblings may do more of their work at night, meaning they miss classes during the day.

"Usually colleges don't ask students what kind of access they have at home, it's not normally something they have to consider," said Fazlullah. "I've heard horror stories of professors and teachers not understanding that a student might be living in a household that doesn't have internet access and being really unforgiving about missed assessments or lack of participation."

It is not yet clear how the pandemic will impact higher education enrollment in the longer term, but Fazlullah is concerned a whole generation of young people may decide they cannot afford to risk a situation where they are expected to study from home without the necessary tools to do so.

Though states and school districts took swift and significant action to increase internet access for K-12 students in 2020, Common Sense Media reports that going into 2021 there were still 12 million under-connected children in the U.S. ∎

COVID-19 Adaptation Case Study: Maine's Study from Car Initiative

The University of Maine System played a pivotal role in expanding Wi-Fi access to students and members of the public who did not have sufficient internet access to study from home during the pivot to remote learning.

NetworkMaine, a unit of the Maine system that provides higher ed institutions, K-12 schools and libraries in the state with high-speed internet access, launched a large-scale "Study From Car Initiative" in March 2020.

More than 200 drive-up Wi-Fi hotspots have so far been created and/or shared through the initiative, enabling students, parents and people without internet access to park near public schools and libraries and work from their cars. "Think internet access in the style of the old drive-in diner," said a tweet from NetworkMaine.

NetworkMaine created new guest Wi-Fi networks at schools and libraries separate from existing networks. By positioning Wi-Fi access points near exterior walls and windows, institutions were able to boost coverage outside of buildings and into parking lots.

The initiative was described as a stopgap rather than a long-term solution by Jeff Letouneau, executive director of NetworkMaine. "It's not the best environment to learn in, being in your car, but it's a heck of a lot better than being left totally out," he told local news station WABI TV.

An interactive map sharing the locations of the Wi-Fi sites statewide has been viewed more than 30,000 times. ∎

Back-to-School Laptop Shortages

The U.S. faced a laptop shortage as public-school districts and colleges rushed to buy low-cost computers and Chromebooks ahead of the 2020 fall semester.

The world's three biggest computer companies, Lenovo, HP and Dell, amassed a shortage of nearly 5 million laptops, the Associated Press found in an August 2020 investigation.

The worldwide PC market grew by around 9 percent in the third quarter of 2020 compared to a year ago, according to preliminary data shared by the research and advisory firm Gartner. Chromebook shipments grew by approximately 90 percent in the same period, largely driven by distance learning demand in the U.S. education market.

Unable to keep up with student demand for devices, some colleges came up with creative (if not completely equitable) solutions for distributing the limited supply of laptops they had. Ivy Tech Community College's campus in South Bend, Ind., for example, gave away laptops to students through a prize raffle on the institution's Facebook page.

Many colleges have significantly expanded their laptop loaner programs to support students learning remotely, scrambling to buy devices as soon as they become available. But some institutions, such as the University of Southern California, have decided that instead of buying more devices, they will pay an external company to lend laptops to students.

"As the need grows, we don't want to just keep buying more computers, because then what happens when there is a vaccine, and now we're struck with 600 computers that we have nothing to do with," Joe Way, director of learning environments at USC, told *NPR* in August 2020. ∎

COVID-19 Adaptation Case Study: University of California, Davis Laptop Loans

When the University of California, Davis, canceled in-person finals and prepared to move all instruction online in early 2020, campus leaders quickly realized that computer access was going to become a problem. There weren't enough computers on campus to meet growing demand and it was soon established that it would be safer for students to work from home.

University staff refurbished all the old computers they could find on campus, but it was clear the university would need to buy more, said Anita Nichols, director of Client Success for Information and Educational Technology (IET). This task was much more challenging than anticipated, she said. Demand surged as institutions and organizations around the world tried to purchase thousands of laptops for students and employees to work remotely. Prices were escalating, and decisions had to be made extremely quickly, said Nichols.

The department's first order of laptops was canceled. A second order of 600 laptops was initially delayed by a snowstorm, then further delayed by the freight company prioritizing medical supplies over other deliveries. When several pallets of laptops finally arrived, IET leaders had to create a laptop loan program from scratch. This included drafting liability forms and developing a system to check out and track laptops, said Nichols. Initially students picked up the devices from the library; as more students left campus, UC Davis mailed the laptops out to students free of charge.

About 10,000 students in receipt of federal financial aid were contacted about the program and told they were eligible to receive one of the loaner laptops. In October 2020, UC Davis loaned more than 300 laptops to students free of charge, with more laptops available to borrow free of charge should students need them. The university's department of development and alumni relations offered to cover the cost of the laptops from the Annual Fund, which is funded by donors. Other units and departments also assisted in establishing the program, said Nichols. UC Davis also purchased Wi-Fi hotspots to loan to students who lacked adequate internet access at home.

Shannen Recio, a first-generation student at UC Davis, said she appreciated the support the university gave her to stay connected while studying remotely. There were a few weeks where she didn't have a laptop or a stable internet connection at her apartment near campus. Now she has a laptop and a Wi-Fi connection in her home.

"I do have Wi-Fi access now in my apartment but it's not the strongest because it's being shared by a lot of people," said Recio. "If I have a midterm or can't risk having slow Wi-Fi, I will still go to campus and find a spot there."

More of the campus has now opened up to students, but Davis still limits how many students can enter spaces such as the library. "You can't all be in there at the same time, and I didn't have headphones," said Recio. "There were definitely a couple of times when I was unable to attend class or missed office hours because of internet access."

Thankfully, Recio says her professors have been understanding. She liked that some instructors asked students to fill in surveys at the beginning of class about their internet and device access. "I think that is something all instructors should do," said Recio. "I'm super shy and emailing my instructors and telling them I don't have a study way is embarrassing. Having an anonymous space to do that was really helpful." ∎

Covering Expenses

Even relatively cheap laptops can cost hundreds of dollars, making bulk technology purchases an expensive endeavor for institutions feeling the pinch of state budget cuts and falling student enrollment.

Fortunately, there is a simple fix that colleges can use to get every student a hotspot and a laptop, Abigail Seldin, CEO of the Seldin/Haring-Smith Foundation, wrote in a blog post published by New America in August 2020.

"Colleges can adjust student financial aid packages to enable students to accept donated technology, and to use federal student aid to cover the costs of computers and internet access," wrote Seldin.

To do this, colleges can change their cost of attendance (COA) to make laptops and internet access "required" alongside textbooks and other course materials. "Individual college financial aid offices can make this change immediately and independently -- without involving the Department of Education," wrote Seldin.

"The best and most equitable answer for students would be for schools to make this COA adjustment and then provide them with hotspots and computers for the year," said Seldin. If an institution is unable to do this, the COA adjustment will still enable students who have yet to max out their federal financial student aid to access federal loans or grant aid to buy the devices for themselves, she said.

"While this option pushes the cost onto students, students cannot be successful in their classes without internet and computer access; technology access is equally essential to the traditional books and supplies included in a school's COA," said Seldin.

The Georgia Institute of Technology was noted by Seldin as the only institution from a sample of 65 colleges that provided information on its website describing the process by which students can request an adjustment to their COA in order to purchase a laptop.

"It seems that most colleges and universities have yet to identify or pursue this option," wrote Seldin. ■

Privacy Concerns

NATALI_MIS/GETTY IMAGES

In response to COVID-19, many institutions began monitoring students' behavior and health more than ever before. On campus, some students regularly had their temperature taken to ensure they were not running a fever. Remotely, some students were required to have cameras on at all times while they learned.

For privacy advocates, the rapid adoption of tools such as video conferencing software and online proctoring was concerning. "I think people need to stop for a second and think about how best to put privacy and equity guardrails around the new information that is being collected and technology adopted during COVID-19," said Amelia Vance, director of youth and education privacy at the Future of Privacy Forum.

The introduction of new technology and data collection to prevent the spread of COVID-19 and support remote learning is "not black and white," said Vance. "It's not always the case that you adopt these things and kids are safer," she said.

While no doubt well-intentioned, educational institutions have had a tendency to "leap into things" without looking at the research to see if evidence exists that a particular technology or approach is effective, said Vance.

Some technologies adopted in response to the pandemic, such as thermal scanners and location tracking,

have significant downsides, said Vance. Some of these technologies just "flat out don't work" to make students safer, she said.

In fall 2020, the Future of Privacy Forum and 23 other education, health care, disability rights, data protection, and civil liberties organizations, published a set of 10 principles for protecting student data privacy and equity during COVID-19.

The principles include limiting data collection and sharing, ensuring use of technology and data is evidence-based and tested for efficacy, empowering students by giving them access to data collected about them and including them in decision-making processes, as well as providing support to students who may have experienced trauma due to COVID-19.

"It's going to be really important as more students come back to campus that institutions think really carefully through whether spending a lot of money on technology that may not be proven to work is really worthwhile, especially if it carries these privacy risks," said Vance.

Particular concern should be taken by institutions when collecting health data and performing digital disease surveillance, said Vance. The University of Michigan's Center for Ethics, Society and Computing published a list of best practices for utilizing COVID-19 apps for

symptom checking, contact tracing, quarantine compliance and exposure monitoring, in August 2020.

Universities serve diverse populations with different needs. Some institutions may require the use of apps by faculty, staff and students, and this could "affect the user's freedom, privacy, safety, livelihood and health," according to the center's list of best practices. The list emphasizes the need for data to be anonymized and collected only for a "specific and clearly articulated purpose."

The ethics center recommends that to "promote data quality, build trust, and avoid coercion, the ongoing collection of health information should be done on an opt-in basis, not as a requirement of employment, enrollment, or access to infrastructure and resources." ∎

Don't Make Accessibility an Afterthought

Federal law requires universities and colleges in receipt of federal financial aid to ensure that digital learning materials are accessible to all students or provide reasonable alternatives in a timely manner.

During the spring, national and international organizations representing students with disabilities expressed concern that in the sudden switch to remote learning due to COVID-19, many higher education institutions were failing to provide adequate accommodations.

Digital accessibility lawsuits by students with disabilities against colleges or universities increased 17 times during the latter half of 2020 due to challenges caused by the COVID-19 pandemic, according to AudioEye, a digital accessibility software company.

A student technology survey of 16,162 undergraduate students from 71 U.S. institutions conducted by EDUCAUSE, a membership organization for higher education IT leaders, found that nearly half of students with disabilities do not register with their institution's disability services office for support. Students age 18 and older have the right not to disclose even if they are eligible for support.

"If technology and IT policies are thoughtfully and inclusively incorporated into a course guided by [universal design for learning], then ideally learner variability, choice and agency increase, while the need for individual accommodations is greatly reduced," said the authors of the 2020 EDUCAUSE survey.

One in three students with disabilities who responded to the survey did not have positive views about how their institution supports their need for accessible content and/or technology accommodations. The survey was conducted between January and June 2020, and thus captures the opinions of students both before and during the arrival of the pandemic in the U.S.

Some blind students had such a poor experience with remote learning that they have decided to take time away from college this year rather than continue online, said Chris Danielsen, director of public relations at the National Federation of the Blind.

There are simple steps instructors could be taking to improve the accessibility of their course materials, said Danielsen. "One of the most obvious is not to scan an image and turn it into a PDF. You need to create an

accessible document and then create a tagged PDF so the characters can be recognized by a screen reader. There is some low- hanging fruit here that is easy for anyone to do."

Blind students have also faced challenges with inaccessible online testing, said Danielsen. This year, for example, the College Board moved its advanced placement (AP) examinations online in response to the COVID-19 pandemic. But the College Board failed to provide blind students with the necessary accommodations to succeed in the test, such as hard copy Braille versions of examinations and tactile versions of charts, maps and other graphics.

The College Board had security concerns about sending hard copies of examination questions to blind students' homes in advance of the test date because of the possibility they might cheat or leak the questions, but said it would give the students extra time to complete the examination using assistive technology such as screen readers.

"There's only so much you can do with a screen reader, when you're studying something complex sometimes you need a hard copy," said Danielsen. "Most Braille displays are one line with between 14 and 40 cells across, you can't represent a complex graphic like a map or a graph like that. Mathematical equations are very problematic to display in that way as well."

Feeling that the College Board's solution wasn't good enough, the NFB and five blind students filed a complaint against the organization with the U.S. Department of Education's Office for Civil Rights in early May 2020.

In a news release at the time, Mark Riccobono, president of the NFB, said the College Board was "propounding a false choice between equal access and security" and forcing a "one-size-fits-all accommodation" on students in violation of federal law.

The dispute was resolved later that month, and the civil rights complaint withdrawn. Admitting no wrongdoing, the College Board agreed to provide approved students wishing to take or retake the test with hard-copy Braille tests.

The College Board also agreed to consult with the NFB on procedures for administering college admissions tests in the future.

"My fellow blind and deafblind AP scholars and I never sought confrontation, compensation or publicity. We desired only to receive fair treatment and to be provided with the materials we require in order to succeed," said Kaleigh Brendle, one of the high school students who bought the complaint against the College Board, in a news release.

"We are grateful to the College Board for listening to and understanding our concerns and working with us to institute change," said Brendle. ∎

Conclusion
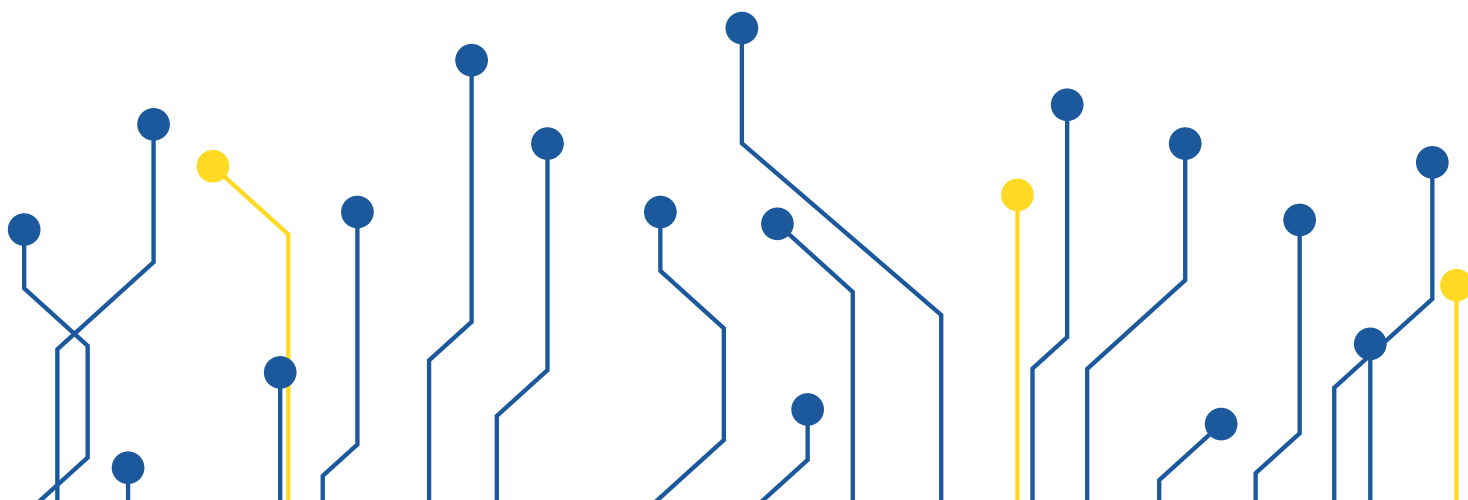
Digital inequity in higher education can no longer be ignored.

Before the pandemic, it was possible for students to muddle through their degrees without a functioning laptop or fast, stable internet in their homes.

Colleges that noticed this need plugged the gap with free Wi-Fi networks and campus computer labs.

Now it is clear this will no longer suffice.

The digital divide as we know it has shifted. Almost all students now own smartphones or tablets or laptops. But these are too often inadequate for the demands of a college degree.

There are students who have fallen behind, paused, or dropped out of higher education because they didn't have the tools to succeed outside the safety net of the college campus.

Right now, there are young people deciding college "'isn't for them"' because they aren't sure they will have the technological, financial, or even emotional support they need to complete a degree.

Statistically, we know that many people who drop out of the education system will not return. This will disproportionately affect students of color, students from lower-income families or the first in their families to go to college, and students who are parents or caretakers.

Remote learning will not be a permanent change for most institutions. Many will go back to offering in-person classes much as they did before. But there will still be students who will live off-campus or wish to study remotely. It should not be acceptable for college support systems to crumble as soon as students are out of sight.

Meeting students where they are has never been more important, and it has never been more possible. So many of the support services that colleges offer could be performed remotely, supplementing existing in-person services. Counseling, library services, financial aid, support for first-generation students and students with disabilities do not necessarily have to be anchored to offices or limited to operating hours inconvenient for some students.

While the pandemic has created many challenges for higher education, it could also create the opportunity for institutions and instructors to better meet the needs of a diverse student body. Degrees could become so flexible that students could choose whether they will go to class in-person or study online day by day – increasing the ability for students to juggle studying with work, family or other commitments.

As institutions look to the future, there are several steps that instructors, support staff and administrators might take to try and close the digital divide on campus:

- Survey students to find out what technology they own, and what level of internet access is currently available to them. At the institutional level, this information can be used to set a benchmark by which progress toward digital equity can be measured. At the instructional level, knowing which activities students can and cannot participate in

will help with curricular design and assessment, as well as identify students who might be most at risk of falling behind.

- Consider how a one-to-one laptop or tablet program might affect student success at your college or university. Some institutions, such as Ohio State University, provide tablets to all first-year students for the duration of their undergraduate studies. While expensive, this solution ensures that all students have a working device and IT support when they need it. Institutions with more limited finances could consider creating laptop loan programs on a much smaller scale. Review what information and support is available to students who may wish to divert scholarship or federal financial aid funds toward the purchase of a device.

- Ask if there are ways your institution could increase the availability of low-cost or free internet access locally. Expanding broadband access is a priority for many state education boards and has garnered bipartisan political support. College leaders could support these initiatives, partner with local internet service providers, or potentially even build their own telecommunication infrastructure in the long term. In the short term, making campus Wi-Fi accessible to the local community may help students and their families to continue their education.

- Respect the privacy of students, faculty and staff members. Institutions should eliminate unnecessary data collection and storage where possible and be mindful of the fact that boundaries between personal life, work and study have been blurred by remote work. Consider whether policies mandating that people show their faces during class or work conference calls, for example, are strictly necessary.

- Try to anticipate the needs of diverse learners. Students with disabilities, first-generation students and students whose first language is not English may not feel comfortable asking for additional support. Universal design principles can be used to try to anticipate the needs of all learners and make classes more accessible to all.

- Be human. COVID-19 has hit some communities harder than others, and many people may be facing unprecedented emotional, financial or social stress in addition to health problems. Instructors can help support students by including words of support and resources in their syllabus outline, as well as talking to students about the challenges they might be facing.

These and other steps might stop today's digital divide from deterring many thousands of learners from their postsecondary education paths. ◼

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