

How Access to Devices can Facilitate Student Success

One-to-one device programs
are becoming more common
—and increasingly necessary



In [spring 2020](#), as hundreds of schools shut down across the U.S., faculty and staff made heroic efforts to ensure the continuity of their students' education. For some students, the closure abruptly deprived them of access to IT services, forcing them to write their class essays on their phones. Administrative staff worked long hours to distribute devices to students or dropped laptops off on student porches—all in response to a suddenly visible need.

"The need became very apparent," says Danielle Rourke, a senior higher education strategist at Dell, who is in frequent contact with college administrators. "At the beginning of the pandemic when everyone was sent home, they were hearing from students, schools were noticing students weren't logging in, they weren't completing things—so they did take it upon themselves to try and figure out ways to help."

The digital divide between students from different socio-economic backgrounds is nothing new, but the shutdown of 2020 opened the eyes of schools to the level of disparity across the student body. In recent years, some schools have embarked on one-to-one device programs in response to the divide by providing students access to personal laptops through a range of purchase or loan programs.

Jamie Wittenberg is assistant dean for research and innovation strategies at the University of Colorado Boulder, a public research university with about [30,000 students](#). "All of a sudden our highest risk students were unable to use our public facilities in the libraries and their courses were all online.

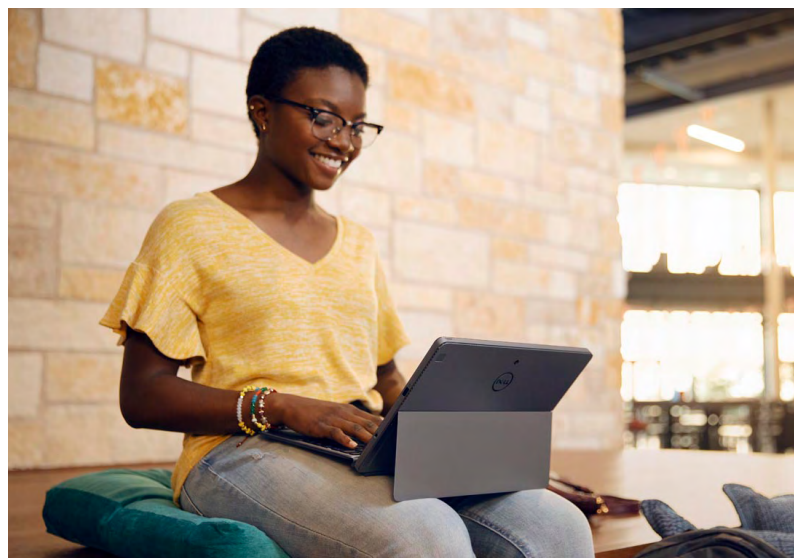
The University of Colorado Boulder introduced a one-to-one program in 2021. "For a student who didn't have access to the technology, they were doubly hit by these intersecting areas of inequality. We wanted to try to level the playing field," Wittenberg says.

Learning from K-12

The logic of a one-to-one device program is relatively simple: each student has access to their own laptop or device and those devices are configured specifically for that student's learning journey. One-to-one programs give colleges and universities the opportunity to secure the devices and tailor their

configurations—like storage space and computing power—to their students' academic activities.

For more than a decade, one-to-one programs have existed in the K-12 system. In the Frenship Independent School District in Texas, [educators say](#) the program has helped teachers create a personalized, student-centered experience, and encouraged young people to take responsibility for their learning.



Unlike K-12, higher education has traditionally relied on the presence of computer labs, or on students themselves bringing their own devices (BYOD) to school. But while BYOD is convenient, it masks a number of problems.

Students may not have devices to bring with them or may have been given hand-me-downs by relatives or friends which may be slow or outdated; some devices may lack the capability to conduct video-conferencing and share material easily online. "If you have a computer that's not effective, that's almost as bad as not having a computer at all," Wittenberg says.

The desire to give all students a consistent starting point for learning is why higher education institutions have begun to show interest in one-to-one programs. The trend mirrors new modes of delivery that are emerging, such as hybrid learning, which has some online and some in-person components—and HyFlex (hybrid flexible) learning, which offers in-person and remote options simultaneously. Even before the pandemic, some institutions were developing new modes of remote instruction to allow students to balance school with other responsibilities and complete coursework wherever they were; in the wake of recurring closures, online classes and hybrid learning have now become the norm.

Val Thomas is the chief information officer at Lincoln Technical Institute, a private vocational institution with 22 campuses dotted across the U.S. including Denver, Texas, Chicago, Indianapolis, Nashville, Las Vegas, and along the East Coast. “The work-school-life balance that a lot of our students need is really helped by the ability to not have to go to campus five days a week,” he explains. “They can stay home—they might be a single parent or working a second job—and they can attend their classes or do it self-paced and make sure they get their homework done as needed. They can use adapted-learning programs or online programs, and then come into campus for the practical labs and the in-person hands-on instruction,” he says.

The impact of this flexibility, he says, has been, “just huge. We saw that benefit for a couple of years before the pandemic and again, it’s simply accelerated it.”

A tool like any other

There are several key reasons why an institution may pursue a one-to-one strategy. It’s not just a case of bridging the digital divide and better serving under-represented groups. A one-to-one program allows professors to assign classwork knowing that students have the resources to complete it. They can do more with technology and experiment with innovative models of teaching such as gamification or augmented reality, for instance, giving students remote access to [state-of-the-art labs](#). Furthermore, by equipping students with pre-configured devices customized to an individual course, school, or university requirements, the programs can increase the efficiency of busy IT staff, streamlining the parts and diagnostics necessary to repair and troubleshoot devices.

Experts point out that institutional needs will vary; students at a community college may have different device requirements from those at a technical college or a research university. Students and faculty in an engineering or art design course might require devices with graphics capabilities or the ability to carry out performance-intensive calculations, while other



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students might use the devices for research and writing. One-to-one schemes are flexible and can be adapted to different requirements.

Lincoln Tech has successfully implemented a one-to-one program for its learners, who come from all backgrounds, Thomas says, including veterans and those hoping to learn more marketable skills. As a trade school, the institute offers training in a range of fields—from nail technology to making chocolate and high-end pastries, to car mechanics, collision repair, to welding, dental assisting, and healthcare. Dell laptops are made available to students as part of their enrollment package, and the vast majority of learners—between 80 and 90 percent take up the offer. As a result of the program, Thomas says that the school distributes between 15,000 and 20,000 laptops each year.

Students benefit from having a device whether the course is taught in person or online. Although it is imperative to attend on-campus, in person for practical courses like dental assisting and nursing, elements like safety classes can generally be studied and tested remotely. In other classes—like Computer Numerical Control (CNC) Machining and Manufacturing—students require devices with more video processing power, memory and disk space, Thomas says. But, “all of our courses have both an online and a lab component. We impress upon the student that this is a tool,” he says. “And the skills you’re going to learn here will be needed for the rest of your life and throughout your career.”

Assessing impact

Most students at the University of Colorado (UC) Boulder do not come from under-resourced backgrounds; only 16 percent are eligible for Pell Grants. But for students who do need additional assistance, it can be challenging to get help because few dedicated programs to support them are in place.

In spring 2020, when schools were forced to close, staff at CU Boulder rushed to support high-need students by re-purposing about 100 laptops that faculty were no longer using for instruction. But as the school reopened, faculty needed those devices back, which consequently motivated Wittenberg

and her team to find other solutions. IT leaders had conducted a survey to assess the level of need. They found that nine percent of their students struggled to get access to a device while thirty-seven percent lacked easy access to reliable wifi. Based on the survey findings, in fall 2021 CU Boulder embarked on a pilot study to explore the benefits of one-to-one programs, as part of a project funded by the Institute of Museum and

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Library Services (IMLS) and carried out in collaboration with Colorado State University Pueblo, a Hispanic-Serving Institution (HSI) with nearly [4,000 students](#).

In order to be eligible to participate, students needed to be first-generation students in their first year of college and residents of Colorado with a high unmet financial need, as indicated by their financial aid status; a group of 22 students in the program received laptops. The study (which is still ongoing) aims to shed light on the impact of one-to-one programs on student success and wellness, an area that Wittenberg realized had not been sufficiently examined when she began probing the subject. In addition, being able to refer to high quality research findings will make it easier for IT leaders to obtain future funding for the program, she suggests.

“Our hope is that this kind of support will improve student success and student performance in their courses and student persistence,” Wittenberg says. “We want to keep our students, and we want to make sure that they’re as successful as possible.” Over the next four years, administrators will compare the academic progress of the cohort in the one-to-one device study with that of a control group, looking at retention and performance. When

they drop the devices off for routine security checks and maintenance, the students will fill out questionnaires about how they are using them. The team is using a designated analytics tool called [Civitas Learning](#), which predictively models the program's effects.

"I wanted our results to be generalizable so that we could collaborate with other institutions and really make a case for these kinds of programs," Wittenberg says.

NCCU: "Too important not to do"

Leaders at North Carolina Central University (NCCU) are also convinced of the benefits of one-to-one programs and see them as key to enabling students to participate in and complete their academic studies.

NCCU is an Historically Black University (HBCU) in Durham, N.C., located near the historic Hayti District and Research Triangle Park, offering [top-ranked programs](#) in the sciences, law, business, and education for its nearly 8,000 students. Even before the pandemic, NCCU was reviewing what technology tools brought to campus. Understanding that some students didn't have robust computers or a device other than a cell phone, a device-loaner program was implemented. This program was consistently used by all students, and during exams computers in the resident halls were often oversubscribed. "We also have two computer labs in our James E. Shepard Library commons with several hundred computers. Prior to the pandemic, you could walk in the first day of classes and those labs were already full," says Leah Kraus, the university's chief information officer.

Ensuring student success has been top of mind for NCCU's Chancellor Johnson O. Akinleye and his leadership team. Kraus began assessing a



one-to-one device program beginning in 2018. Urgency met opportunity during the pandemic and a one-to-one program was implemented. This program, however, is different from many others at NCCU; the focus wasn't only on first-time first-year students but on all first-time full-time students. As at UC Boulder, evidence of the need for such a program came from a student survey. In spring 2020, and during the initial stages of COVID, administrators sent a questionnaire to students to ask about their access well-being, and the academic environment. The latter included access to resources, and featured a section about devices and connectivity.

"We wanted to survey our students to see how they were doing," recalls Kraus, who remembers it as a worrying time. "We closed our physical doors, like many other schools our students didn't come back after spring break. Students and parents had many questions, including what will happen with classes, what will happen with my items and how will NCCU support them. They provided regular communication to students throughout that spring answering those questions and more. The survey was one means to get a sense of how the students were doing. Did they have the tools they needed? The sur-

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vey included questions about technology, such as, 'Do you have broadband? Do you have a computer? Does it have a webcam? Do you only have a cell phone?' We know a student cannot be successful with only a cellphone and just the data on their cellphone, so these questions were important to our next steps. Once we heard from students that were in need of technology, we followed up with the over 500 that expressed need for devices."

At first, when the pandemic hit, the focus was on getting a device that would meet basic needs of accessing online and video conferencing capabilities. NCCU worked with several vendors to secure

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devices that ITS could loan and in many cases ship to students. It was a whirlwind of activity that revealed the magnitude of the challenge in getting resources to students. "At that time our focus was on getting a device that we knew would be temporary. We wanted to find a way to do our loaner program virtually to ensure student success," Kraus recalls.

Kraus and NCCU's chief financial officer decided that it was important to not just provide loaners but provide a device that would enhance the student's experience, no matter the methodology of teaching (online or in person). Kraus asked her director of client services whether the team could support the program. They agreed that it was and is too important not to do. A dedicated taskforce was set up. The school obtained funding through the Coronavirus Aid, Relief, and Economic Security Act, also known as CARES, which provided emergency funding to institutions in 2020 wherein half of grant monies were allocated directly to students.

By the fall of 2021, the team had managed to put a formal program in place, including a careful "check-in" process by which all full-time first-time to NCCU students, including graduates and transfers, were eligible for a laptop, headset, and a backpack. A distribution area was set up in the main library with ITS staff that scanned students' ID card, checked that the student accepted responsibility for the laptop, and then linked it to the Dell box serial number to create a permanent record of student ownership. Approximately 2,300 devices packages were distributed.

This was one of many operational feats completed by NCCU's ITS team, as they also prepared classrooms for socially-distanced, hybrid and HyFlex teaching. The results of the team's efforts are still being felt. The one-to-one program has a long-term impact on student success in many ways. One that was important in fall 2021 was that students who may need to quarantine or isolate were able to use their own device instead of borrowing a laptop temporarily, they are able to continue using their own, familiar device. "The timing of the laptop program was really important to them," Kraus says. "It made a difference because, unfortunately, we still are in the pandemic."

Careful planning

It takes some time to lay the groundwork for a one-to-one program—at NCCU, Kraus and her team had been examining different options for many months before the pandemic hit. At Lincoln Tech, where a one-to-one device program was first rolled out in 2012, Thomas says it was offered first in a nursing course before being introduced across the college system. After that initial introduction, "We worked out some of the kinks in the program and moved forward with more and more courses, more and more campuses," he says. "If you've never done this before a big bang is not the way to go."

Indeed, there are a number of questions for administrators to consider before initiating this strategy: who will own the device, the school or the student? What will the impact be on the school's fees and accounting, and what are the implications for

student financial aid? What is the most equitable way to roll out the program? When they finish their degree, will students keep the laptop?

Administrators of successful programs have also given thought to the type of device they need, taking price and longevity into consideration. The University of Colorado decided on the Dell Latitude 5420, the same device provided to faculty and staff. Wittenberg describes these laptops as portable and serviceable. In addition, they were familiar. “We know that we can support these devices; they’re reliable, they’re powerful enough for our students’ needs,” she says.

The team at NCCU also chose Dell devices. “We wanted it to not just be a one and done. We wanted the device to be something that would sustain them for four years and after that—that was really critical for us,” Kraus explains. “A well-managed and maintained laptop can last five years if you buy the right model and have the right vendor partner.”

Partnering with an experienced provider can help enhance the support available. Some schools may request comprehensive IT support or help with setting up dedicated security and web portals. When they work with Dell, administrators can also select from a variety of policies on the device, choosing to loan them out, give them to students directly, or allow students to pay for them gradually over time. At Lincoln Tech, students have the option of buying the laptop when they enroll in their degrees. They keep it throughout their studies and are expected to continue using it after they graduate, Thomas says.

At UC Boulder, students who receive the laptops are given the option of purchasing them at the end of their degrees for a mere \$20. “These students

have been using these machines for four years at this point,” Wittenberg explains. “So really it’s a way to make sure the students have continued access to a reliable computer, whether they’re applying for jobs at that point or maybe they’re already working—possibly remotely.”

Choosing the right partner is vital, and IT leaders at NCCU, UC Boulder, and Lincoln Tech uniformly described Dell’s role as key. The past two years have seen not just pandemic-related issues, but also delays across the world’s supply chain as workers, students, and others raced to work and learn from home. Dell communicated swiftly with its partners in higher education to forestall roadblocks and find solutions. As Kraus put it, “Dell has been a tremendous partner. Again as we got to the logistics of rolling this out and we hit some of our hurdles, we could not have done it without Dell.”

Life-long skills

In designing the strategy, Wittenberg advocates taking a “student-first” perspective, and suggests, “Think about what you need to already have in place in order to lend this kind of technology.” A program could leverage the libraries’ loan infrastructure or build on existing services for maintenance and repairs.

Reporting requirements and how a free device could impact student aid may also vary depending on the institution’s status, experts say. “We always encourage schools to consult with their legal counsel and their budget and financial planning office as well as perhaps scholarships and awards to make sure that the programs work for them,” says Rourke, a senior higher education strategist at Dell.



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Administrators must also consider the nature of technical support required and how it will be organized. Dell offers additional levels of assistance through its Pro Support program. For Thomas, at Lincoln Tech, having Pro Support was invaluable. “They’ll answer just about any question, even if it might not be quite in their wheelhouse. And we even have accidental damage in there, too,” he says of the support package.

Many schools offer dedicated orientation sessions for the new laptop owners, helping them log in and download the necessary programs and updates, and making sure the devices are in working order before students take them home. At NCCU, a laptop bar was set up in the library for this purpose, while Lincoln Tech spends a couple of hours on training. As Thomas puts it, “We don’t just hand them the laptop and walk away.”

In planning for and implementing the program, collaboration across different divisions—academic affairs, student services, scholarships and student aid—was essential. But perhaps most critical, administrators say, is the role of IT, whose teams often have to step up and handle the practical side of implementation.

At UC Boulder, “We had staff that would stay late, who would be rushing to re-image a laptop really quickly so that a student could have it before an important deadline,” Wittenberg recalls.

“That kind of service and that kind of student support is what makes the program really successful. It’s what makes students feel comfortable participating in a program like this.”

Future-proofing for students and schools alike

It should come as no surprise that higher education has undergone rapid change over the past two years, the pandemic accelerating a variety of nascent digital trends. For colleges and universities,

having a one-to-one program in place has improved institutional resilience and has positioned them to maintain continuity should other unforeseen events occur—whether that is a pandemic, a cyber-attack, or a natural disaster. Schools can now simply advise their students, faculty, and staff to switch modalities moving to remote teaching, learning, and operations until the threat has passed. Lowering the barriers to student learning by giving them easy access to the tools they need can make a college more attractive, differentiating it from its peers in a crowded market.

Of course, ensuring students succeed in their college careers and afterwards is a goal at the heart of what motivates administrators who are building one-to-one programs. “At the end of the day, to me this is just something that’s a necessity—it’s required,” Thomas says.

“We have to have the right tools in our students’ hands, whether it be the right book, whether it be the right mechanic wrench set, or the right laptop. This is just another one of the tools they’re going to use throughout their life and their careers.”

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