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College IT Apprenticeships Provide Actionable Learning Experiences

Labs and simulations combined with workplace experience are helping colleges and universities provide next-level learning.

by [Erin Brereton](#) X

Erin Brereton has written about technology, business and other topics for more than 50 magazines, newspapers and online publications.

Following the successful launch of a healthcare apprenticeship program in 2019, the [Colorado Community College System](#) — which comprises 13 independently accredited institutions — began to consider what other industries might benefit from a similar initiative.

After analyzing [research on talent and labor conditions](#) in the state, CCCS determined that the IT sector offered high-wage entry-level job opportunities, which, instead of a four-year degree, potentially required a [postsecondary or industry-recognized credential](#), according to Michael Macklin, associate vice chancellor for workforce solutions.

“Colorado has seen pretty substantial growth in nontraditional apprenticeship fields outside of the trades,” Macklin says. “The premise was, how do we look at other high-growth industries in the state and those key industry networks to [support their talent pipeline needs](#)?”

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The CO-TECH apprenticeship program was introduced in March 2020, led by four CCCS colleges: [Arapahoe Community College](#), [Community College of Denver](#), [Front Range Community College](#) and [Pueblo Community College](#); community partner Activate Work joined later. CO-TECH helped prepare adult learners to enter 14 IT occupational roles, including software developer, IT help desk and cybersecurity specialist.

The instruction that program participants received, Macklin says, encompassed practical learning application scenarios, such as [working in a cybersecurity lab](#), to identify and address threats.

CCCS also worked with the 23 Colorado employers that signed an agreement to offer CO-TECH apprenticeships to confirm they'd have positions for students to move into after the program.

“One of the cornerstones with apprenticeship is that you're not studying, then applying and going to work. You're employed as soon as possible,” Macklin says. “We're really trying to ensure students are meeting the needs of industries. They walk out our door and in their door.”

[Apprenticeship programs can pay off](#) for employers, Macklin says, if they're willing to invest the time and resources to provide on-the-job experience.

“We see [higher retention](#), [higher persistence](#) with the organization,” he says. “It is a molding of that individual through training that's being provided by the organization and the colleges. That's a shift for a lot of businesses, to really take ownership of their talent development versus seeing colleges as providing an output they can plug into their organizations.”

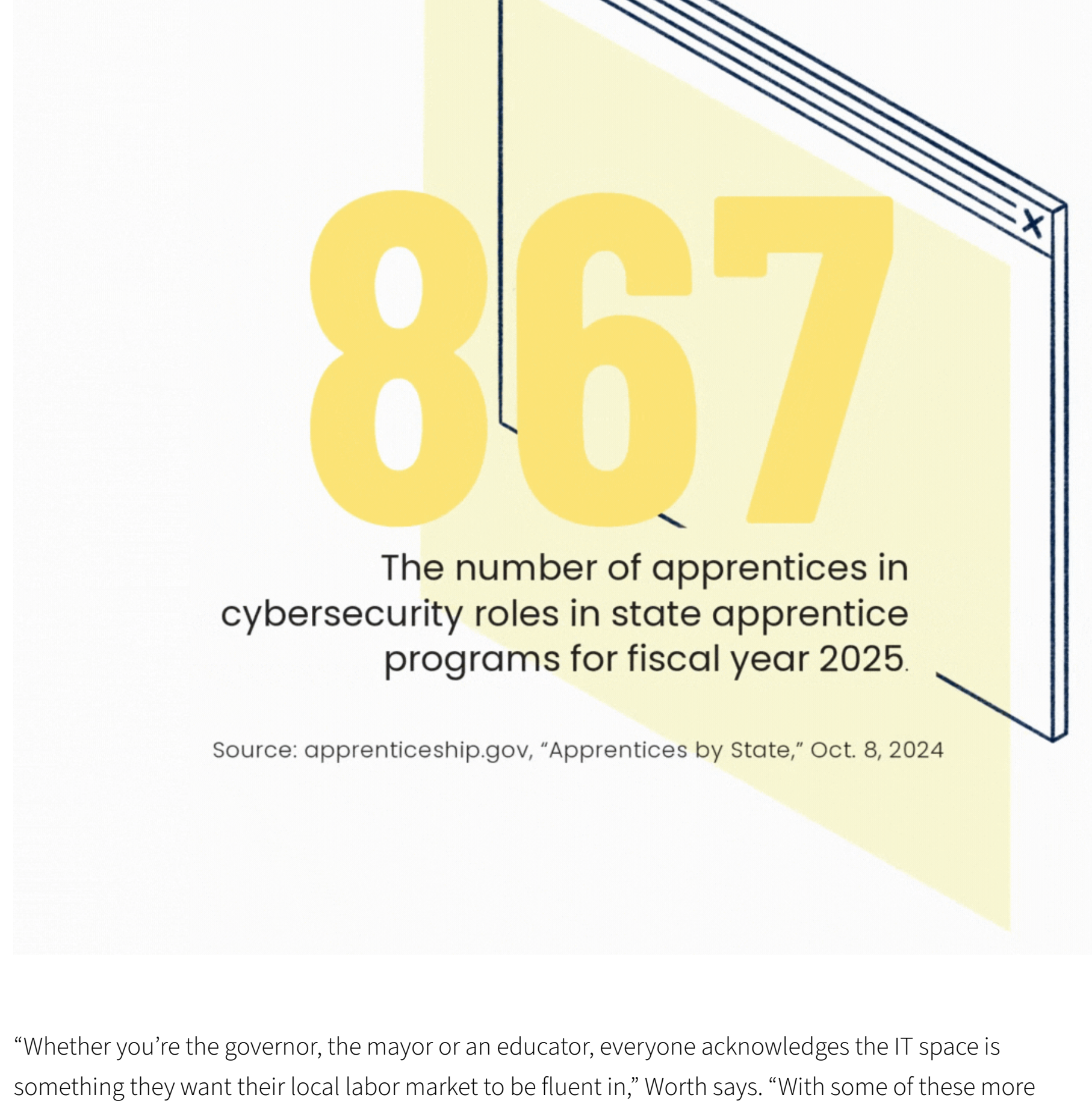
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All Stakeholders Can Contribute to and Gain from Apprenticeships

Community colleges, as one of the historically most affordable, accessible and industry-specific higher education options, can be a natural fit for apprenticeships, according to Jen Worth, senior vice president of academic and workforce development at the [American Association of Community Colleges](#).

“Most of the students who come to a community college are [balancing work and life](#) while they're going on their educational journey,” Worth says. “Every hour spent in the classroom means they are potentially not earning a wage. The apprenticeship model gives them a paycheck while they're learning.”

Because the proficiencies that IT jobs require can periodically change, she says, being embedded in a company's operations allows students to observe and learn the latest procedures, which provides employers with a larger pool of skilled talent.



“Whether you're the governor, the mayor or an educator, everyone acknowledges the IT space is something they want their local labor market to be fluent in,” Worth says. “With some of these more modern opportunities in [registered apprenticeships](#), it's much more relevant to what is actually being practiced in the field today.”

The [University of Cincinnati](#) has a long history of pairing students with hands-on work opportunities. Dating back to 1906, its cooperative education initiative, often referred to simply as co-op, lets students attend classes and work full-time jobs relating to their majors during alternating semesters.

As part of a collaboration with several schools that are regional partners or that reached out when creating their own work-integrated learning programs — including [Xavier University](#), the [Wentworth Institute of Technology](#) and [Johnson C. Smith University](#) — UC created the [NEXT Apprenticeship Program](#).

The university debuted the program in January 2020, according to Aaron Burdette, assistant professor and faculty director for workforce development and continuing education at UC.

“We recognized [there was a talent shortfall](#), and if we wanted to maintain our competitiveness, we needed to be able to fill critical industries,” Burdette says. “IT and IT-associated industries were [struggling at the time for talent](#), and many people were saying, ‘This job is something we can get you into almost immediately; you just need to have some foundational competencies.’”

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Students don't have to be traditional technology majors to take advantage of the program. Advisers work with participants to design academic plans that will help them obtain the necessary certifications, experience or other elements to qualify for roles as computer and IT system support technicians or cybersecurity analysts.

To accommodate individual learning preferences, UC provides tech-related instruction in a variety of ways, using [Dell](#) computers and [Intel](#) systems. Students might study cybersecurity principles, for example, by completing challenges in a 3D simulation.

“We recognize that, depending on the type of learner and where they're coming from, they're going to want to engage in their education a little bit differently,” Burdette says. “Our military veterans and transitioning and active-duty individuals worked [really well in the virtual environment](#) because they had a more ‘I need to train physically’ mindset.”

UC was able to tap into relationships it had previously formed with employers through its co-op offering to arrange the NEXT Apprenticeship Program's experiential learning component.

“We were able to converse with employers by saying, ‘Hey, what do you think about hiring these apprentices?’” Burdette says. “We had a lot of good through companies such as Kroger and Paycor. We were able to really build off established internship and co-op programs within those companies.”

Some students worked with nonprofit organizations that didn't have internal IT staff but found during the COVID-19 pandemic that they [needed help from trained professionals](#).

“They were using our apprentices to set up a lot of that digital footprint,” Burdette says. “That helped these nonprofits move past providing traditional services to being digitally based nonprofits.”

Programs Can Prime Students to Become Outstanding Apprentices

[Northern Virginia Community College](#) introduced a slightly different take on the apprenticeship model this year.

When memory chip manufacturer [Micron Technology](#) announced in April that it planned to offer an apprenticeship program in Manassas, Va., for students enrolled in an approved technical certificate or two-year associate degree program, NOVA began assembling a complementary pre-apprenticeship program, according to Josh Labrie, director of [NOVA SySTEMic](#), which supplies support services for STEM students.



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Michael Macklin, Associate Vice Chancellor for Academic Affairs and Workforce Development, Colorado Community College System

Twenty participants are currently enrolled in [NOVA's Engineering Technology Career Scholars](#) program, intended to help high school graduates learn about semiconductor and data center operation.

“A pre-apprenticeship program really provides all the lead-up work — exploration of the industry, building on some soft skills,” Labrie says. “Then, it brings in some of the technical skills. So, as they go into the registered apprenticeship program, they're set up to succeed.”

ET Career Scholars program participants complete 26 credits for either NOVA's [Data Center Operations Career Studies Certificate](#) or an engineering technology-based Career Studies Certificate that focuses on the semiconductor field during the fall and spring semesters while receiving tutoring and other assistance.

In the program, students may view video-based instruction on [Chromebooks](#) in a lab, with an instructor present to answer questions, or spend time opening and closing circuits to direct power in a ballroom the school converted into a data center training facility.

Those learning experiences, Labrie says, should help prepare students to apply for and potentially participate in Micron's apprenticeship program and eventually enter the workforce.

“We have a lot of equipment for engineering technology courses, so when they go to Micron or a data center, they're seeing the very same buttons and switches they might have used in a classroom,” he says. “Part of it is to understand how you distribute power through a building; that's what we're teaching these students to do, in addition to the other processes and techniques employers need.”

FUNDING FIRSTHAND LEARNING

Apprenticeship programs' upfront development costs can be a heavy burden for higher education institutions, but federal grant programs may be able to help, says Macklin.

As one of the 28 recipients of the U.S. Department of Labor's [Apprenticeship: Closing the Skills Gap](#) grant program — designed to increase apprenticeship opportunities in sectors and occupations that haven't traditionally offered them — CCCS received \$2 million to establish IT and cybersecurity apprenticeships from March 2020 to March 2024.

“A grant removes that startup cost barrier from institutions so they can see ROI on that program more quickly,” Macklin says. “The curriculum is built. That was funded through the grant. And now, through tuition and revenue, those programs can persist.”

NOVA's Engineering Technology Career Scholars program, which prepares participants for future apprenticeships, also received support from the Labor Department via a roughly \$4 million grant infusion from the [Apprenticeship Building America](#) initiative, according to Labrie.

US saw the Scaling Apprenticeship through Sector-Based Strategies grant, also offered by the Department of Labor, as an opportunity to build out its next phase of experiential learning, according to Burdette.

Because part of the grant was allocated to wage reimbursement, Burdette says, UC was also able to compensate small employers with 50 or fewer workers who participated in its NEXT Apprenticeship program for up to 50 percent of an apprentice's wages.

“They were able to not only get qualified talent that was university-backed, they were also able to get it at a very cost effective price point,” he says.

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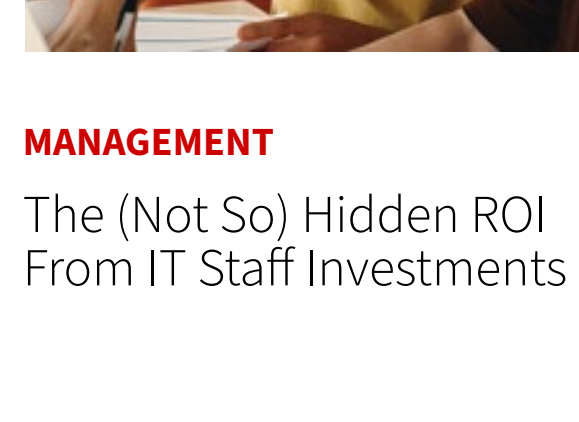


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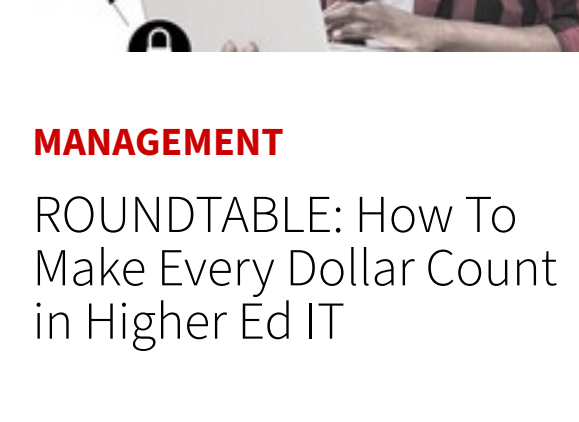
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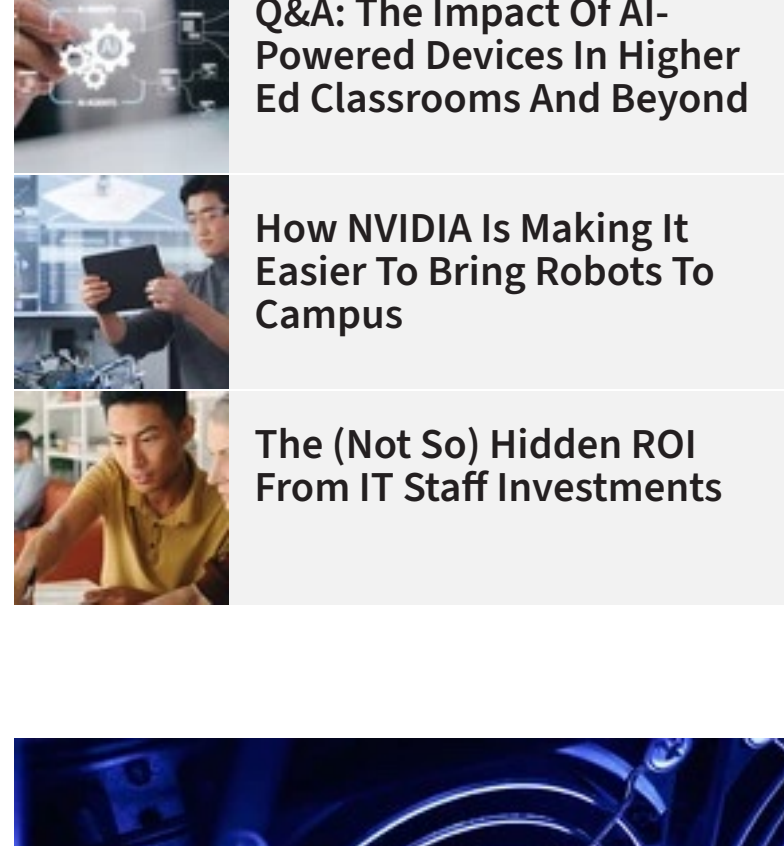


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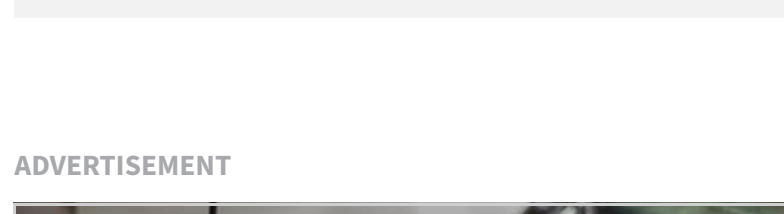
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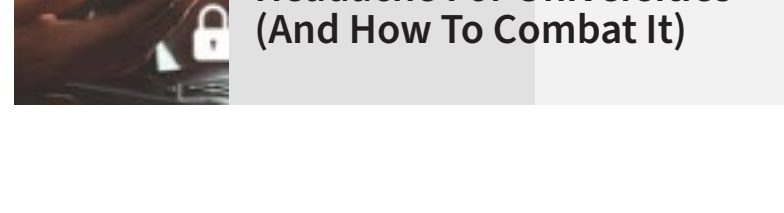
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