INSIGHTS REPORT

How Colleges Can Thrive in the Skills Economy

THE CHRONICLE OF HIGHER EDUCATION

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Workday is proud to sponsor this report from *The Chronicle of Higher Education.* Before joining Workday as the senior director of Higher Education Product Strategy, I was a registrar for more than 20 years and had the honor of being a founding member and past president of the Chesapeake and Potomac Association of Collegiate Registrars and Admissions Officers (CAPACRAO). I've been deeply involved in transformative change in higher education—change that is needed now more than ever. I led national efforts to develop and deliver comprehensive learner records, providing students with tools that help them identify their skills and prepare for their career journeys.

Through Workday research with higher education leaders, we have a deep understanding of both the challenges the industry faces and the opportunities institutions are prioritizing. More than three-quarters of leaders we surveyed say student experience expectations and changing student demographics are significant challenges. Across the board, students of all ages and in all types of programs expect modern, personalized self-service tools that guide them through their program. And they want to see how those programs connect to careers.

In that same research, 80% of higher education leaders told us they are prioritizing career outcomes for students, helping them and their families better understand the value of their degree and how it's preparing them for the jobs of the future. And 71% of institutions are exploring avenues to recruit new types of students and expand the types of programs they offer. As skills-based hiring becomes more prevalent, higher education leaders will need to continue to innovate and highlight the connections between curriculum and careers for all types of students and programs.

As a leading trusted platform in student information systems, financials, and human resource management, Workday is at the forefront of supporting both forward-thinking higher education institutions and companies focused on skills-based hiring. We're continually innovating and providing new ways to support student success—just like our hundreds of global higher education customers. And we're proud to support conversations and research that highlight the transformational work taking place on campuses around the world.

Sincerely,

Joellen Shendy

Senior Director of Higher Education Product Strategy,

Workday

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By Alexander C. Kafka

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How Colleges Can Thrive in the Skills Economy was written by Alexander C. Kafka and underwritten by Workday. *The Chronicle* is fully responsible for the report's editorial content.

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INTRODUCTION

ISTOCK

The skills economy is a buzzy preoccupation for colleges these days, but drawing connections between personal vocation and profession is a mission as old as American postsecondary education itself.

Theological, teachers, trade, agricultural, technology, business, and community colleges have always combined broad educational grounding with specialized market-oriented and regionally geared skills. Some institutions, like the nation's first teachers college in Vermont, were founded on such principles 200 years ago.

The University of Pennsylvania's College of Liberal and Professional Studies (LPS) dates back to Saturday courses and teachers' training in the 1890s. Those have evolved into more than 40 programs ranging from high-school intensives through master's degrees. LPS serves 5,100 students, 65 percent of whom are in for-credit offerings. Twenty percent of LPS students are in graduate programs, and 38 percent are undergraduates, with additional learners at other stages of life.

The tracks are kept current by employer advisory boards and enroll students like Charles (Carlos) Hernandez, a 33-year-old Green Beret who, after serving as a drone operator in Afghanistan and other deployments, earned a bachelor's degree in

applied arts and sciences from Penn with courses in leadership, data analytics, and professional writing. Now he's working toward his master's in computer science and artificial intelligence at Stanford University and has been recruited to work for Nvidia.

Hernandez says his Penn courses were immediately applicable to his work in the Special Forces; they helped him piece together the histories of troubled regions where he'd served; and caught him up on language, writing, and public-speaking skills he hadn't mastered in school during a difficult childhood in Los Angeles.

Demonstrating clear pathways from book learnin' to paycheck earnin' has become essential to colleges' individual and collective brands.

Narrower part-time contemporary technology and business upskilling programs too trace their origins back many decades, and some have grown enormously. Twenty-one million professional and other learners enrolled in Stanford Online Education programs from 2012 through 2024. That includes master's degrees, graduate certificates, credit-bearing courses, credentialed professional courses, and executive and professional-development programs. But it all began in 1954, with 23 students in a part-time master's course in engineering. Hewlett-Packard, Sylvania, General Electric, and the Stanford Research Institute paid their employees' tuition, with exam and homework hand-delivered by courier.

Still, if colleges' professional programs have a long, rich history, the last 15 years have seen acutely rising anxiety and urgency around higher education's role in teaching job skills. The Great Recession and the pandemic demonstrated the volatility of the labor market, increased the public's skepticism toward colleges' return on investment, and ratcheted up politically charged distrust of the higher-education sector. Demonstrating clear pathways from book learnin' to paycheck earnin' has become essential to colleges' individual and collective brands. And technological progress has both eased and complicated that task.

Advances in web, wireless, and learning-platform technologies have expanded the scalability and scope of hybrid and remote programs, offering colleges, but also their partners and competitors, new methods to reach widening markets. Breakthroughs in machine learning, computer-aided design, 3D printing, quantum engineering, nuclear energy, bioengineering, mechatronics, robotics, autonomous systems, augmented and virtual reality, and AI have accelerated the range and depth of skills programs on offer for so-called new collar workers. But those advances have also accelerated the obsolescence of those skills, making that training both more crucial and more ephemeral.

A decade ago, for instance, computer-science degree programs and even coding boot camps seemed to plausibly position students for a lifetime of comfortable, even lucrative, wages. That

implicit guarantee grows shakier every day as AI and other efficiencies push workers out of coding and other tech jobs even as AI assistants make elite coders that much more productive.

In tech, the glaring exception to the market doldrums is cybersecurity, which faces estimated gaps of 500,000 workers in the United States and 4.8 million worldwide. Severe worker shortages also plague some more-traditional fields like nursing, dentistry, and other health-care jobs, as well as construction and other skilled trades.

Beyond technological tremors, whiplash-inducing changes in Trump-Biden-Trump federal funding priorities make it even more difficult for colleges to know what kind of training programs to invest in. Under Biden, colleges and their industry partners could feel relatively bullish about solar, wind, and other developing alternative-energy technologies. That has changed markedly now that Trump is back. His administration has frozen and even clawed back funds designated for infrastructure, clean energy, and other federal research and development and work-force training.

Microchip development and fabrication, along with AI ventures, are wild cards, with CHIPS and Science Act funds in peril though Vice President

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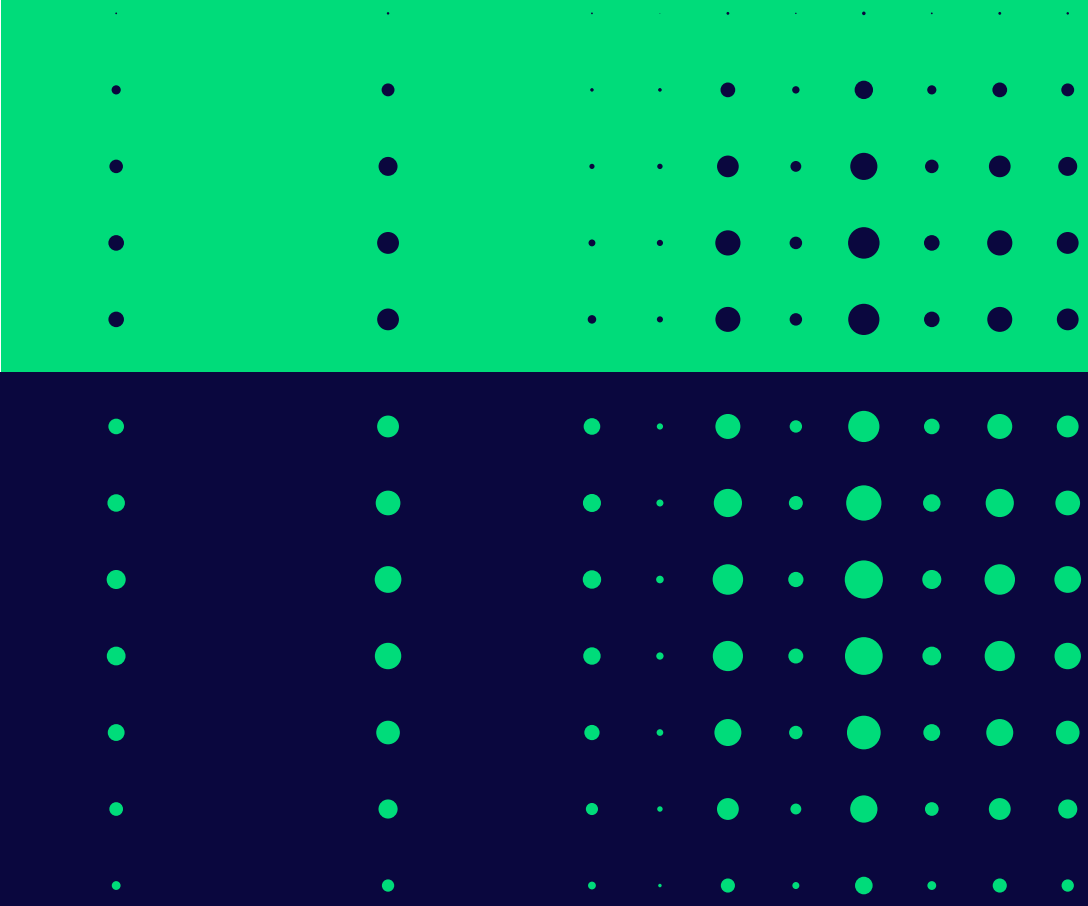
JD Vance has emphasized AI as a national priority. That, along with chaotic, ever-shifting tariff policies, brings new twists and turns to the stock-market roller-coaster ride of an embattled firm like Intel, a major U.S. and global employer. And when large employers face murky prospects, so do their college training pipelines.

Despite the uncertainties, there are some clear trends and fruitful strategies for colleges to pursue. This report will explore them, and along the way, readers will find numerous examples of how colleges try to prepare traditional undergraduate students and working learners alike for their first or next steps in meaningful and rewarding careers.

SECTION 1

Both/And



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Which matters more — a liberal-arts education or specialized occupational skills?

You'd think that debate might have died down in the decade and a half since the technology entrepreneur Peter Thiel argued the latter and started offering college students $100,000 to drop out and launch their own tech start-ups. In 2013, the economist Lawrence H. Summers, former Clinton Administration treasury secretary and Harvard president, called the Thiel Fellowships "the single most-misdirected bit of philanthropy in this decade."

But with 271 Thiel Fellows since the program began, it's more popular than ever, while Thiel (who, incidentally, has bachelor's and law degrees) is even more disenchanted with colleges' "wokeness" and allegedly anti-meritocratic ways than he was back then. Dropout digital-wiz kids continue to elbow their way into both Silicon Valley power jobs and the DOGE fed-shredding teams led by Elon Musk (the world's richest man, who is worth more than $300 billion and has two bachelor's degrees).

Away from the headline-grabbing clashes over campus protests; diversity, equity, and inclusion efforts; transgender athletes; cultural studies; and other flashpoints, however, red and blue states

Though some employers pay lip service to skills hiring, in fact they still generally favor hires with bachelor's degrees.

alike benefit from carefully considered, collaboratively designed, college-based skills-education programs. And though some employers pay lip service to skills hiring, in fact they still generally favor hires with bachelor's degrees.

True, enrollment in certificate programs, *The Hill* reports, rose 28.5 percent in the five years ending in the fall of 2024, and major companies and some state governments are dropping degree requirements. "This," writes a *Harvard Business Review* columnist, "is leveling the playing field for the estimated two-thirds of the nondegreed work force who historically haven't been able to access certain higher-paying jobs."

But while some of these certificates are closing the education gap, others are widening it. Note, in *The Hill* article, that many of those certificates are being earned by dual-enrollment high-school students looking for early credentials and by post-bachelor's-degree workers looking for additional certifications to get teaching and nursing jobs.

In a column for *Inside Higher Education*, Jamie Merisotis, president of the Lumina Foundation, cites statistics from Tear the Paper Ceiling, a national campaign promoting skills-based hiring, showing that 61 percent of Blacks, 55 percent of Hispanics, 66 percent of rural workers, and 61 percent of veterans are "STARs" — skilled through alternative routes, not a bachelor's degree. "The equity barriers to jobs are real," Merisotis writes, and he applauds these efforts for trying to overcome those obstacles.

But don't be fooled, he warns, for while skills-based hiring might slightly expand opportunities for those STARs in today's job market, it won't come close to filling tomorrow's workforce needs.

He points to a 2023 survey by the American Association of Colleges and Universities: Eighty percent of employers "strongly or somewhat agree that college prepares people for success in the work force." And a study by Harvard Business School and the Burning Glass Institute, writes Merisotis, "tracked more than 11,000 jobs where a bachelor's degree was no longer required in the job description. It found only a 3.5-percentage-point increase in the share of nondegree holders hired into those roles — a decidedly underwhelming number suggesting the buzz about skills-based hiring may be more hype than trend."

With job and skill churn, employees also need to learn how to learn.

Moreover, he points out, as a frequently cited 2021 Georgetown University study found, a bachelor's degree boosts lifetime earnings by $1.2 million. More equity in hiring doesn't mean more equity in salary.

It's a riddle, then: Employers say they value skills, not diplomas, yet in hiring they still veer toward diplomas. To help solve the riddle, let's turn to the 2023 "Future of Jobs" report from the World Economic Forum. There we learn that employers predict that 44 percent of workers' skills will be disrupted by 2028, as will 23 percent of jobs, an aggregate of emerging and declining positions (for a projected net decrease of 14 million jobs, or 2 percent, worldwide).

That lessens our surprise at the skills those employers value most: analytical thinking, creative thinking, and then three self-efficacy skill sets — "resilience, flexibility, and agility; motivation and

self-awareness; and curiosity and lifelong learning." Also among the top-10 prized attributes are "empathy and active listening, and leadership and social influence."

In the context of such employer feedback, it's clear why degrees still matter.

"We just need warm bodies," many employers first tell Kori Bowen, vice president for industry relations at the 11-campus Texas State Technical College. But she says that as the conversations continue, it quickly becomes apparent that they need a lot more. Once they get talking, employers explain that they actually need workers who think critically, present themselves well, work well in teams, show leadership potential, and so on.

With job and skill churn, employees also need to learn how to learn — "metacognition," educators call it. And where do students learn that best? In college, says Don Weinkauf, dean of the School of Engineering at the University of St. Thomas, in St. Paul, Minn.

"There still is a very entrenched sense, inside the faculty ranks in particular, that 'skills training is beneath me.'"

More than half of the school's faculty members have spent at least five years in industry, Weinkauf says, and each department has at least 15 advisers keeping the curriculum up to speed. But particularly in the generative-AI era, new software, platforms, and capabilities emerge constantly. So the ability to teach oneself new skills matters most — both narrow technical skills and professional, "essential," "durable," or what used to be called "soft" skills, like teamwork and communication. Employers know, Weinkauf says, that when they hire a college graduate, they're getting someone who typically, in eight blocs of around 15 weeks, has repeatedly learned new content of escalating difficulty, with new skills, alongside new classmates, guided by new teachers.

"You do that 30 or 40 times," he says, "and, independent of the topic, you have shown that you can succeed in that process. That is education."

But why do colleges have to lean so hard into occupational skills when it's challenging enough cramming relevant content into their academic programs? Can't internships and apprenticeships take care of the experiential-learning components?

Ideally, yes, says Brandon Busteed. But "the painful reality is that they just don't scale."

Busteed is the chief executive officer of Brand-Ed, which operates training programs for The School of The New York Times, Vogue College of Fashion, Sotheby's Institute of Art, and the Manchester City Sports Business School. Before that, he held key positions at Kaplan as global head of learn-work innovation and at Gallup as executive director of education and work-force development.

Studies show, Busteed says, that when students have good internships, it doubles the odds of their being engaged in work later. He calls such experiential learning "the secret sauce of higher education." The problem, he says, is that only about a third of students get that secret sauce — there are too few such positions, and many students can't afford to take them because they often pay little or nothing.

Institutions like the University of Cincinnati, Drexel and Northeastern Universities, and the University of Waterloo, in Canada, have leveraged that gap by making co-ops, internships, and externships integral to their reputations, Busteed

says. But many colleges don't have the resources or industry partners to do so.

The conversation around liberal arts "versus" occupational skills has grown somewhat more nuanced and reasonable over the last 15 years, says Busteed. "But there still is a very entrenched sense, inside the faculty ranks in particular, that 'skills training is beneath me.'"

"Higher education's great folly," he says, "has been the either/or mentality that it's held onto. For though it is in many ways a very intelligent industry, says Busteed, "it's a very jejune way of thinking."

Ask managers which of three graduates they would hire: one with a bachelor's in English, one with a bachelor's in cybersecurity, or one with a bachelor's in English and a minor in cybersecurity. Candidate Three will win out many times over, says Busteed.

Employers "have always been clear," he says. "They want students or graduates and employees who are both broadly educated and specifically skilled."

In Section 2, we'll see what that looks like and explore some of the flexibility in attaining that *both/and* combination.

SECTION 2

Find Your Partners

ISTOCK

Two days before the 2025 Super Bowl, Jillian Archer and Ryan Michonski, sports-management students at Nichols College, were working at the Super Bowl Experience in the Ernest N. Morial Convention Center, in New Orleans. Tens of thousands of fans practiced throwing, catching, kicking, and dashing, surrounded by trophy, helmet, and other displays of pigskin glory. On game day, Archer and Michonski were at the Superdome, but they didn't get to comfortably watch the Eagles pummel the Chiefs, because they were working with the stadium-operations team — starting at 3:30 a.m.

They were among 16 Nichols students under the supervision of Christopher Streeter, an assistant professor of sports management. Organized in partnership with the NFL, it was the fourth Super Bowl work-experience trip for Nichols students, Streeter says, incorporated into a three-credit course that also includes 10 class sessions covering football finances, marketing, branding, and history.

Archer is a senior who plays and coaches basketball. She's worked with the Special Olympics and wants to go into sports sales and event planning. Michonski, a junior, has coached baseball, played baseball and hockey, and is interested in team front-office operations. What could be more relevant to both students than the firsthand experience of working at a spectacle viewed by 203 million people who bet $1.4 billion on the game and spend $19 million on snacks, apparel, and decorations?

Harvey Mudd College determined in 1963 that its engineering students should have an industry experience akin to what medical students get in their clinical rotations. So Mudd started its own clinics, which are capstone group projects with

five or six students per team. Nancy K. Lape, chair of the department of engineering, says it has 20 to 25 clinic projects a year, with computer-science and math students tackling an additional 22 to 25 clinic projects.

One engineering-clinic team worked with NorthStar Medical Radioisotopes on designing a plate to remove excess heat from a system that produces radioisotopes for cancer treatment. That required study of heat transfer and thermal, fluid, and mechanical simulations, proficiency with computer-aided design, and hands-on validation-testing skills, Lape says.

Mikayla Mann, a senior at Mudd, leads a clinic team working with the biotech start-up Indomo. Indomo is developing a self-injectable acne therapeutic, and Mann and her fellow team members are tasked with developing a good skin analog that could reduce the need for testing on humans or animals. The team members are using their model, made of foam and latex, to test puncture depth and absorption volume.

Creating the right learning experiences with the right partners is an art.

Mann, whose parents are alumni of the college and systems engineers, plans to go into bioengineering and has also had work experiences with the medical-equipment manufacturers Hologic and Medtronic. Her Indomo clinic experience, she says, has not only increased her scientific and engineering knowledge, but also improved her skills in group planning, project management, leadership, communications, and budgeting.

In Cookeville, Tenn., Stephen Canfield, a professor of mechanical engineering at Tennessee Tech University, brings students' skills to life in a different way. In 1998, he collaborated with a colleague to help children in the Upper Cumberland region who have developmental delays or other disabilities. The Tech Engineering for Kids program, which is affiliated with the Tennessee Early Intervention System and taps the expertise of Canfield's colleagues in various departments, has continued ever since, annually involving more than 150 students on 25 to 30 projects.

The students in "Kinematics and Dynamics of Machinery" are usually juniors with lots of coursework under their belts but at a point where they wonder how that will connect with real life, Canfield says. "They're ready to do something," and when they meet a child, they "just say, 'Wow, I'd like to help them.'"

"This is like their first customer," he says, complete with contract, budget, deadline and, often, setbacks. The students persist, even if that means passing along a partially solved project to the next group of students the following semester or picking one up from a preceding team. And when the memory of other college accomplishments has faded, former students from the course, sometimes bringing their own kids around campus, remember those first customers vividly, Canfield says.

The budding engineers enrolled in the course have worked on hundreds of projects over a quarter century, taking a universal-design approach to assistive technology. They have rigged a playground tricycle with hand pedals for children who couldn't use their legs, built a special sink for a 9-year-old who uses a wheelchair, and created custom-made prosthetics so that a middle-schooler born without arms could play the drums. They made a horse-drawn cart with a special braking system for a 3-year-old farm girl with only one leg who wanted to ride with her family. After a news story ran on TV, community

members gifted her ponies to go with the cart, and she named them all Pickles.

Still, not all experiential learning can be as involved as an advanced project in a degree program, and creating the right learning experiences with the right partners is an art.

"My view," says Kathleen deLaski, a senior adviser for Harvard University's Project on the Workforce, "is that you have to walk the line between having authentic, realistic early-career prep and experience, and fad-of-the-week skills development that may be obsolete by the time the degree is finished."

To do so, deLaski — who is also founder of the Education Design Lab and author of *Who Needs College Anymore?* — urges colleges to collaborate with each other, with employers, with municipalities, and with other skills-training providers to offer flexible, short-term learning opportunities that fit together like Lego pieces. For while a bespoke blend of liberal arts and skills may be the ideal for focused students with clear goals, a step-ladder approach is, for many other students and working learners, often a more-realistic alternative. The idea, says deLaski, is that learners can come in and out of learning opportunities as their needs, and employers' needs, change.

Erin Crisp is the assistant vice president for learner success and work-force pathways for the University of Tennessee system, but early in her career she taught high-school and middle-school English. In those roles, she says, about 30 percent of her students were clearly on a path toward college success, and another 30 percent could be but didn't see themselves as college material, whether because of lagging academic or social skills, subpar home environments, or histories of trauma.

Students in that second group, she says, "really need a work-based pathway."

It's with that kind of flexibility in mind that Crisp and her colleagues were invited to enter a partnership with the Tennessee Department of Education to lead a statewide Grow Your Own teacher-apprenticeship program involving 14 colleges and universities, 92 school-district partners, and four regional coordinators. The program provides low- to no-cost training and is helping to solve a state teacher shortage. It has supported 772 teacher apprentices and aims for a sustainable 600 annually. It has also supported 11th- and 12th-grade students who tutor fourth-graders, preparation for the high-schoolers' own possible teaching careers.

Crisp attributes the program's success in large part to the dedication and leadership of the state education commissioner and the president of the university system. When school districts know state leadership and money are behind the program, Crisp explains, they're that much more comfortable contributing their own time and effort. Crisp and her colleagues are now looking at expanding the approach to early-childhood-care programs, health care, and manufacturing.

State funding has also been key to Central New Mexico Community College's skills programs. For work-force training not covered by traditional higher-ed funding like federal financial aid, New Mexico appropriated $20 million for 2024-25 and another $60 million for fiscal years 2025 through 2027. The college is receiving $11.8 million of those combined allotments.

That money helps support tuition assistance and paid work-based learning opportunities for 57 noncredit work-force-training programs at Central New Mexico that are not eligible for federal financial aid. Most students have at least part-time jobs, says Tracy Hartzler, CNM's president. Among the college's wide-ranging offerings are training for quantum technicians, commercial drivers, health professionals, and law-enforcement personnel. Many students work for, or aim to work for, corporations like Amazon, Intel, Lockheed Martin, and Sandia National Laboratories, and for government R&D agencies like the Air Force Research Laboratory.

Hartzler and her colleagues explain that, when possible, courses are designed to help bridge credit and noncredit programs. For example, a student can take a noncredit work-force-training program in mechatronics and industrial automation technology. Then that student can get credit for prior learning and continue to advance their knowledge and career by pursuing an academic-credit certificate or an associate degree in that same field.

Responding to the ebb and flow of government priorities and business cycles is tricky. "You can't just gin up a thousand industrial technicians overnight."

In steady communication with regional and national employers, the college regularly reviews program offerings, creating or reactivating some, and sunsetting or shelving about three to five a year because of low demand, which is sometimes cyclical. For instance, demand for training in photonics and electronic soldering lagged for a while but has recently surged again, says Kyle V. Lee, chief executive of CNM Ingenuity Inc., the college's work-force-development arm. And a program to certify learning specialists as teachers was well-designed, Hartzler says, but because local districts didn't require the certification, enrollment lagged, so the college shelved it.

In any field, learning skills and applying them on site are two different things, and hands-on experiences through job shadowing, internships, and apprenticeships are part of all of Central New Mexico's career technical-education programs and overseen by Joy Forehand, vice president for work-force and community success. Helping to structure those efforts, she says, are eight competencies established by NACE, the National Association of Colleges and Employers. Those competencies, like leadership and teamwork, overlap considerably with the essential skills prioritized by the World Economic Forum respondents noted in Section 1.

Responding to the ebb and flow of government priorities and business cycles is tricky, Hartzler says. "You can't just gin up a thousand industrial technicians overnight." Offering the right programs at the right time requires a steady, productive relationship with decades-old industrial partners but also an eye to emerging and growth industries. For example, Central New Mexico Community College and the University of Colorado at Boulder are work-force-development leads for Elevate Quantum, a Mountain West region federal-state-private partnership. And in alternative energy, Ebon Solar and Maxeon are two solar-panel manufacturers drawing from and helping to shape Central New Mexico's training programs.

Staying in step with such industrial trends doesn't happen by accident, says Lee. "It has to be in the strategic core of the institution."

That's also the ethos at Texas State Technical College. "What do you need and how can we pivot — whether that's tweaking a curriculum approach or sunsetting a program entirely," says Kori Bowen, the college's vice president for industry relations. Accountability is key, because of a state-funding formula that pays the college only when the graduate gets a job. That "returned-value funding model" is based on five years of graduates' wages.

The training could be for phlebotomy, nursing, health billing codes, Tesla and other auto maintenance, cybersecurity, or upkeep of electrical and

Ties to regional industries are crucial, yet plugging into national employer networks makes community-college skills programs even mightier.

power systems. Regardless, the student will almost certainly spot and consider how those credentials could work toward a degree. A 12-week smart-automation program, for instance, could include seven certifications, Bowen says, and an adviser would help the learner map how that might contribute to an associate degree.

Ties to regional industries are crucial, yet plugging into national employer networks makes community-college skills programs even mightier. Unmudl is a marketplace founded by colleges in 2019 to capitalize on strength in numbers. It is a national hub, explains its chief executive officer, Parminder K. Jassal, through which today over 130 employers can efficiently connect with 14 community colleges to increase workers' skills and recruit them from across state and regional divides. Prospective employees and students can explore jobs in demand at companies, learn what courses and skills are in demand at community colleges, and examine tuition resources that might fit their career goals.

While colleges have to be vigorous and purposeful in staying up to speed on industry practices, those networks benefit all involved because they are multidirectional, says Sunil Budhrani, an emergency-room physician, health entrepreneur and executive, and clinical associate professor of emergency medicine at George Washington University. He earned his bachelor's degree in English and neuroscience at the University of Pennsylvania, and is on the Employer Advisory Board for Penn's College of Liberal and Professional Studies. A first-generation college student himself, he says "experience is the greatest classroom," and while the board meets quarterly, he and many of its members have far more frequent contact with the university.

Board members, he says, learn from each other best practices across industries like health care, finance, and hospitality. They help Penn administrators devise multidisciplinary AI and other microcredentials that employers will value. But board members also learn from university personnel, Budhrani says — for instance, how to more systematically consider and place neurodiverse people, who constitute one in five, in jobs in which they'll thrive.

SECTION 3

Competency-Based Education

ISTOCK

For some learners, credential mixing and matching works well. But degree programs too can be fully skill-centered, sometimes at mammoth scale.

Consider Western Governors University, founded in 1997. As a recent *Forbes* column describes, in its short history WGU has become the nation's largest university, growing to an enrollment of more than 187,000 students and nearly 400,000 alumni. Entirely online, it offers some 80 degree programs in schools of business, education, technology, and health. Faculty members mentor students at a ratio of between one to 100 and one to 120. Students are also supported by faculty instructors, online student communities, and academic, data-analytics, and technical staff in the United States and Mexico.

What drew the attention of the *Forbes* columnist, Bryan E. Penprase, to WGU is its emphasis on competency-based education. Penprase, an astrophysicist, explains to *The Chronicle* in an interview that WGU represents a fascinating contrast to Soka University of America, where he is vice president for sponsored research and external relations. Soka is a small liberal-arts college of about 450 students in Orange County, Calif. It's secular but inspired by the Buddhist values of compassion and wisdom, and has class sizes of no more than 16 students.

"An exclusive focus on proficiency and skills risks creating workers unaware of the deeper implications of their work."

Penprase sees complementary roles for efficient and cost-effective learning of practical knowledge, as at WGU, and more-intimate consideration of context, experience, identity, and purpose, as at Soka. "You need both," he says, and notes that "an exclusive focus on proficiency and skills risks creating workers unaware of the deeper implications of their work."

The scaled-up proficiency part of that equation rests largely on competency-based education (CBE), a major component of WGU's degree structure and, increasingly, those of many other training programs. Put simply, CBE emphasizes mastery and application of skills rather than lecture-hall hours or other rote measures of traditional education. In practice, CBE programs tend to rely strongly on industry ties to keep programs and curricula current, and they often award credit for skills gained through students' prior work. That not only rewards experience but also helps place and pace students appropriately to their own level and rate of learning.

The Tennessee teacher-apprenticeship program discussed above is an example, as is the Washington Education Association Apprenticeship Residency in Teaching program in Washington State, which started as a state-approved educator-preparation program in 2023 and offers bachelor's- and master's-degree holders a certification program in special education. The first cohort of 13 has finished, and the next two cohorts are in progress, with 50 current apprenticeships, says Jim Meadows, the program's director.

In California, seven community colleges are collaborating with regional employers on a bilingual competency-based AgTEC Workforce Initiative to train Central Valley farm workers in a 12-unit certificate program covering digital literacy, basic equipment operations, crop-production systems, and other skills. But, says Karen Aceves, AgTEC's director, the program, which is federally and state funded, hopes to eventually train thousands of farm workers. And it aims to expand its offerings to include forward-facing practices involving drones and AI in precision agriculture.

The Competency-Based Education Network, or C-BEN, helps colleges and other skills programs define relevant competencies, says Amber Garrison Duncan, the network's executive vice president and chief operating officer.

Competency-based education emphasizes mastery and application of skills rather than lecture-hall hours or other rote measures of traditional education.

The network helped convene employers and college personnel for AgTEC, to hammer out what competencies should be taught and assessed in text, video, simulation, and in-person components, says Aceves.

C-BEN helped the University of Tennessee system decide which teacher-training competencies worked across its apprenticeship programs and which were too granular or localized, says Erin Crisp, the system's assistant vice president.

For the Washington State special-ed apprenticeship program, says Meadows, C-BEN is helping to adapt the training around 16 competencies that will serve, at their own level and pace, not only seasoned educators but also occasional substitute teachers who want the in-demand special-ed credential but have far fewer hours of classroom experience.

Athens State University, in Alabama, is a primarily online upper-level institution that serves juniors and seniors who transfer from other colleges. Its president, Catherine Wehlburg, says C-BEN is helping to incorporate the university's business courses into the Alabama Talent Triad trajectory for high-school students who begin college through skilled-trade programs but might have broader business ambitions.

Whether for degree or other programs, expertise in competency-based education is in demand. Duncan says that since its creation in 2013, C-BEN's institutional membership has grown from seven to more than 600.

A longtime challenge in the skills economy has been efficiently assessing, documenting, and communicating skills learned outside degree programs — skills that are, in Wehlburg's phrase, "stackable, trackable, and packable." The goal is a "digital wallet" or "digital transcript" that clearly and universally lists skills like, say, proficiency in tracking crop nutrition in specialized agricultural software. California is trying to standardize such practices through its Career Passport program.

Creating digital transcripts can sometimes prove difficult, though, between industries, states, and regions, even between different companies. C-BEN's Center for Skills is trying to bridge some of those gaps, says Duncan, as is CredLens, a new nonprofit affiliated with the Strada Education Foundation that aims to become "the national hub for verified nondegree credential data."

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As Paul Fain writes in a *Work Shift* article, CredLens hopes its efforts will help answer questions like, "What jobs do people get after earning the credential?" "How does that compare to what they previously earned?" and "What are the most commonly stacked credentials?"

SECTION 4

AI — Wave or Tsunami?

ISTOCK

Society has weathered technological transformations before, but is AI different?

In a *Harvard Business Review* article, Walter Frick explores AI's prospective impact on the labor market. Technological advances have historically increased productivity, creating new opportunities for more people, he writes. But evidence suggests that digital technologies have increased inequality. He cites a chapter from a National Bureau of Economic Research volume on the economics of AI written by Daron Acemoglu and Pascual Restrepo, labor economists at the Massachusetts Institute of Technology and Boston University, respectively. They highlight "the possibility that technological improvements that increase productivity can actually reduce the wage of *all* workers."

In an interview with *The Chronicle*, Acemoglu notes that while the 20th-century incorporation of electric machinery into manufacturing and the household sector took more than 40 years, the use of AI tools is spreading much faster. There isn't anything inherent in AI that dictates that it should disempower workers, take jobs, and widen inequality, he says. It could be treated as a public good, used to make workers better decision makers and train them more efficiently. But as of now, AI's use, and its impact, hinge on the interests of

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a handful of tech titans, not on wide societal consideration, he says. "The tragedy of today, which could be the catastrophe of tomorrow, is that trillions of dollars are being poured into AI at the bidding of just a few people."

In that context, how should colleges treat AI?

Don Weinkauf, the dean of engineering at the University of St. Thomas, recalls when students had to stash their calculators for math class, lest those wizardly Texas Instruments become a crutch and lessen one's proficiency with the slide rule. That all sounds laughable now, as we casually tap our smartphone calculator apps, or just talk to them.

With AI, there's been analogous hand-wringing and far quicker adoption. In a couple short years, Weinkauf says, AI has been harnessed by students for brainstorming, planning, and proofing. And faculty members use it in all sorts of ways, like creating finite language models from their own lectures to help produce problem sets and study guides, or to collect, anonymize, and organize peer feedback on student projects.

Still, looking at the bigger picture, says Weinkauf, AI is a transformation of a much larger order and different type than past advances. Computers simplified calculations. The internet and smartphones democratized access to knowledge. But AI helps synthesize knowledge. "It's not content. It's process," he says, "a distinction we need to be versed in."

"Educators," he says, "have to up their game."

Hollis Robbins has a more-alarmist take.

"It's Later Than You Think: The Starkest View" was the title of her Substack post on the matter. The former humanities dean at the University of Utah, where she is now a special adviser on the humanities and AI, writes that new artificial general-intelligence systems "can reason, learn, and solve problems across all domains, at or above human level." She warns, "If universities cannot articulate in detail how their faculty exceeds AGI capabilities, what value are they offering to tuition-paying students?"

Faculty members who advance research beyond AGI capabilities, those who teach "advanced equipment and sophisticated physical skills," and those "handling previously undiscovered source material or developing novel interpretations that outstrip AGI's analysis" may still find roles in this new higher-education climate, she writes. But others? Hmm.

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What of general education? "AGI can deliver it more effectively than any human instructor." And what of those "'irreplaceable' human elements of education — mentorship, hands-on learning, community building, and critical thinking?" She rhetorically shrugs: Those "might suffice for a four-year social-networking summer camp, and some parents may still value that."

Ouch.

Mark S. Lacker, a professor of entrepreneurship at Miami University, in Ohio, takes such warnings to heart. He treats his course like a professional internship with him as supervisor in a flipped classroom. Students are assigned projects and use

AI as their guide to completing them. Using a prompt structure from Ethan Mollick, an expert at the University of Pennsylvania's Wharton School on AI's impact on business and education, Lacker asks his students to create an AI persona to serve as their collaborator.

The student uploads a knowledge base and trains the persona to become the student's tutor. The student assigns the persona the task of using explanations, examples, and analogies, noting the reasoning behind answers, and pushing the student to dive deeper into the topic.

It's like an athlete prodding a coach to push that athlete to a higher level. Lacker says that he tries to convey to students how they can "teach themselves and take ownership of their own learning journey."

"What I'm finding is that what we're trying to do resonates with the students," he says. "This is where the puck's going, and you have to get up to speed. They buy into the thesis immediately."

Will such practices be enough for colleges to prove their worth or will employers increasingly take on such responsibilities themselves?

After all, many companies have done so for years, and AI might accelerate and widen such practices. ETS and Accenture are betting that it will.

They're rolling out a talent-management program that combines ETS AI-based assessment programs like Futurenav with Accenture's AI-based learning platform LearnVantage.

These programs are sophisticated and getting more so, says Tanner Jackson, ETS's general manager of corporate solutions. They don't just level up challenges based on proficiency but also measure posture, eye tracking, rate of speech, and other data to gauge the subject's comfort with a topic, co-working skills, leadership potential, and ease in prompting and collaborating with AI. The tools can help assess potential hires, identify employees well-suited to particular jobs and projects, and point to promising career pathways.

So far the technology has primarily been beta-tested at ETS, says Jackson, but the companies are starting to promote it in the B2B — business to business — marketplace, and their target audience is large: the Fortune 1000.

Corporate America's souped-up in-house learning capacity, then, is one more challenge among many for higher education.

In contrast to the efficiencies of competency-based education, particularly when it is fueled by AI, traditional liberal arts are virtuously inefficient, says Soka University's Bryan Penprase. To be smarter than a chatbot requires wisdom, and that takes time and can't be rushed or easily quantified.

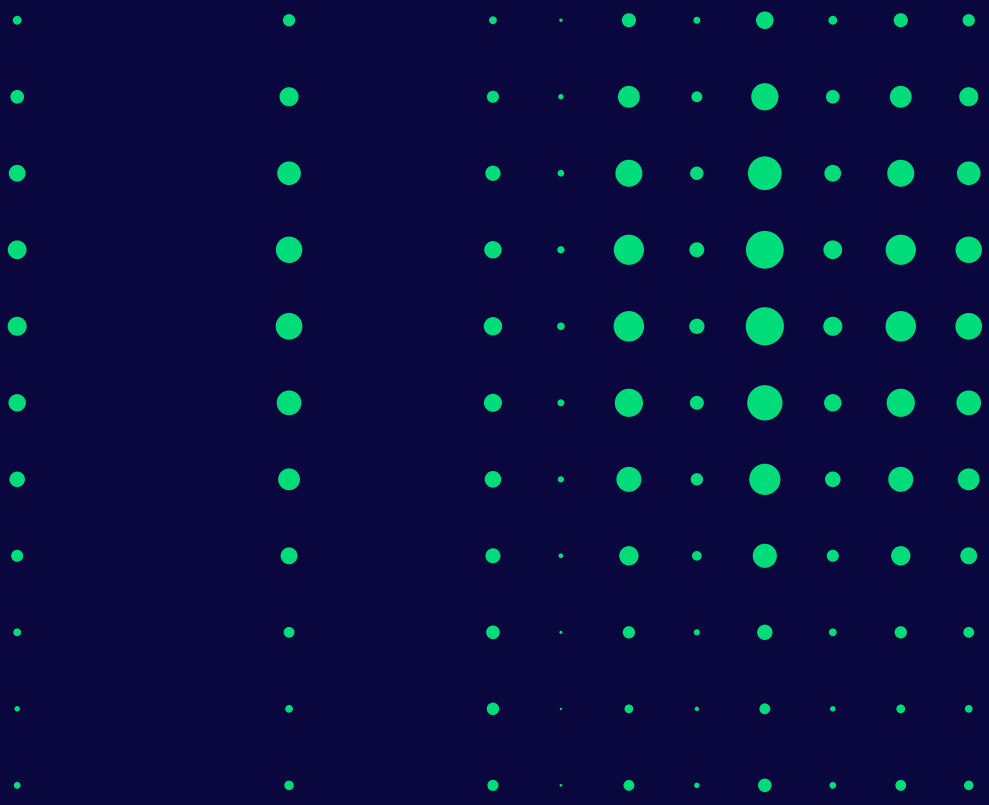
What, after all, makes a professional life successful? asks Don Weinkauf, the engineering dean at the University of St. Thomas. "Your character is what's going to be manifest in your career. And you have to ask yourself, How do you develop that? How do you develop judgment, curiosity, comfort with ambiguity?"

But will character development, as the University of Utah's Hollis Robbins suggests, be shrugged off along with other "'irreplaceable' human elements of education"? Note those scare quotes.

If academe wants to retain and even increase its slice of the skills economy, it will have to demonstrate to prospective students, industry partners, and legislators that it teaches both specific and durable job skills and a general intelligence more valuable than the artificial kind, all at a sensible cost. In designing those programs and making that pitch, colleges will have to be bold, creative, daring, collaborative, and proud advocates for their occupationally geared programs.

To be smarter than a chatbot requires wisdom, and that takes time and can't be rushed or easily quantified.

In other words, they'll have to demonstrate, on a grand scale, the same professional skills they teach.



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