



AN INSIDE HIGHER ED SPECIAL REPORT

# Careers in a Changing Era

How Higher Ed Can Fight the Skills  
Gap and Prepare Students for a  
Dynamic World of Work

**INSIDE**  
HIGHER ED

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How Higher Ed Can Fight the Skills Gap and Prepare Students for a Dynamic World of Work

AN *INSIDE HIGHER ED* SPECIAL REPORT

BY MIKHAIL ZINSHTEYN



# Executive Summary

What is college for? For many of the people taking out loans, accepting publicly subsidized grants and working more hours than they should per week to afford an education, the answer is a job.

Deans, provosts and association heads can argue a bachelor's degree instills a lifelong passion for learning that carries the individual through multiple careers, friendships, travels and loves, but students and their parents don't care. College is too expensive an undertaking to treat as anything other than an investment with returns that pay dividends down the line. Them's the breaks. If higher education is at the mercy of privatization, it figures that its

customers will think like participants in a market evaluating a commercial good.

The upside for colleges, both two-year and four-year public and private institutions, is that the gap between what employers want and what colleges teach their students isn't insurmountable. Intuitively, colleges have known all along that the labor force depends on them to train the workers of tomorrow; they've been delivering the goods with decent marks for decades. In that time the job market has undergone booms and busts as [oil derricks](#) and Silicon Valley unicorns rose, fell or went out of commission, and as interest rates seesawed in a capitalist sandlot. Somehow

students continue to graduate and employers hire new talent with a predictable dollop of grievances about their readiness. This basic dynamic is likely to continue.

Such a declaration may come as a surprise in an environment of well-heeled Chicken Littles warning of tectonic shifts and sea changes to the world of work and the skills employers will demand of recent graduates. But prognostication is hard. The crystal balls that look into the future to spot employer trends aren't reliable and are mottled with bias.

There are also several different conversations going on at once in the public arena: individual employers have for years been asking for maturity, an analytical mind and social skills from college grads; the ascendant class of pundits and business associations observes mismatches in specific sectors of the workforce and ascribes them to every pocket of the labor market. A stubborn skills gap may be more canard than actuality for numerous reasons, including that students in fact respond to perceived shortages in the economy by taking the courses needed to plug those gaps. Whether the economy does right by them for heeding the call is a different matter.

In the meantime, companies have been off-loading their training responsibilities and hiring less from within their own ranks, preferring instead to recruit the workers of other firms in a macroeconomic minuet. Labor unions, a shell of their former selves, still

recruit and educate workers in the trades, but in lower numbers.

Colleges, witnessing a shift in perception about their own value, have sought adjustments to their model by making promises to students that they'll encounter experiences that prepare them for the workforce. Some colleges have merged scores of majors in disparate fields like computer science and English. Others have promised every student an opportunity to work as interns or in co-ops, or to take on learning projects to show off their research mettle to employers. Some colleges are ensuring their professors know which broad competencies employers want in recent grads through focus groups with career services staff. More community colleges are pushing work exploration into the early part of the curriculum so that students see the connection between their studies and employment. Others offer innovative courses in anthropology for students to research the world of work and discover careers that pique their interest. These changes are sincere but hardly dramatic.

Professors still teach, career service advisers continue to connect students to internships and co-ops, and presidents proceed with their concerns about a perception of value in a time of rising prices for a college education.

Some long-term trends in higher education give informed watchers pause. For all the tsuris over liberal arts degrees, they've



remained stable and lead to decent jobs. Applied majors, such as marketing or business, attract greater worry from scholars and analysts because of their reliance on a capricious labor market that's only presently in need of those talents. Next, there's attendant concern that the applied majors aren't keeping up with changes in the workforce. But even those can be fine-tuned, either with updates to the curriculum or by having students pursue a more variegated lineup of courses.

Then there's everything colleges have little control over. Businesses like to raise their hiring standards during economic downturns because they can get away with it. Wages for college completers have remained virtually flat for more than 20 years, perhaps because a steady stream of newly minted graduates keeps the supply fresh without any major increase in demand. Pervasive racism ensures people of color are hired at lower rates than whites, a truth that can ding on employability ratings those campuses that graduate large numbers of black and Hispanic students and those from other marginalized groups.

This special report describes what colleges—community colleges and four-year institutions public and private—are doing to improve the employability of their students. The lessons are both sobering and uplifting. The institutions profiled here sought inspiration from their peers, at times selecting favored strategies from numerous colleges to arrive at a game plan for workforce readiness that they

could pull off given their finances and regional needs. The plans now in place at these colleges took years to develop and are still being revised. But leaders are noticing progress, from graduation rates to positive trends in student surveys.

Though no one solution is a masterstroke in eliminating perceived skills gaps, college leaders should be emboldened. Their strategies, covered in this report, should inform the decisions other colleges make to get ahead of the narrative that they're not doing enough to prepare students for today's economy. ■

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# Assessing the Skills Gap

First, it's important to consider what colleges are up against—both the macroeconomic rhythms that are endemic to a capitalist society and the stubborn mind-sets that color the conversation about the link between college and work in unhelpful ways.

One core misconception is that employers routinely fault recent graduates for lacking hard skills. In fact, the opposite is true, at least according to surveys of recruiters who believe the technological skills new graduates have are aligned with the jobs for which they're being recruited. That doesn't mean students and colleges can't do more to beef up on hard skill sets to open more doors in the job market; evidence suggests doing so can make students more employable to a greater variety of employers.

Another major misconception is that the labor market is stable and predictable, as if it were an engineering problem that could be solved by an input-output table. Addressing imbalances in the labor market is not as simple as observing a shortage and ordering more skilled workers. Educating students to enter in-demand fields takes time. In the interim, markets can tank; a deficit of petroleum engineers or coders can easily turn into a surfeit of both if those sectors suddenly aren't hiring. [It's happened before.](#)

But the chorus of consultants and prognosticators in the punditry class doesn't seem to appreciate that dynamic, says Peter Cappelli, the George W. Taylor Professor of Management at the Wharton School at the University of Pennsylvania and director of Wharton's Center for Human Resources.



Cappelli's thinking influenced this chapter considerably.

Consultants would be offended to hear it, Cappelli says. But "they are thinking like the Soviet planners were thinking."

## Why students go to college

Numerous surveys capture the reasons students choose to go to college. They tend to say the same thing: finding a job is the top reason for pursuing a bachelor's degree.

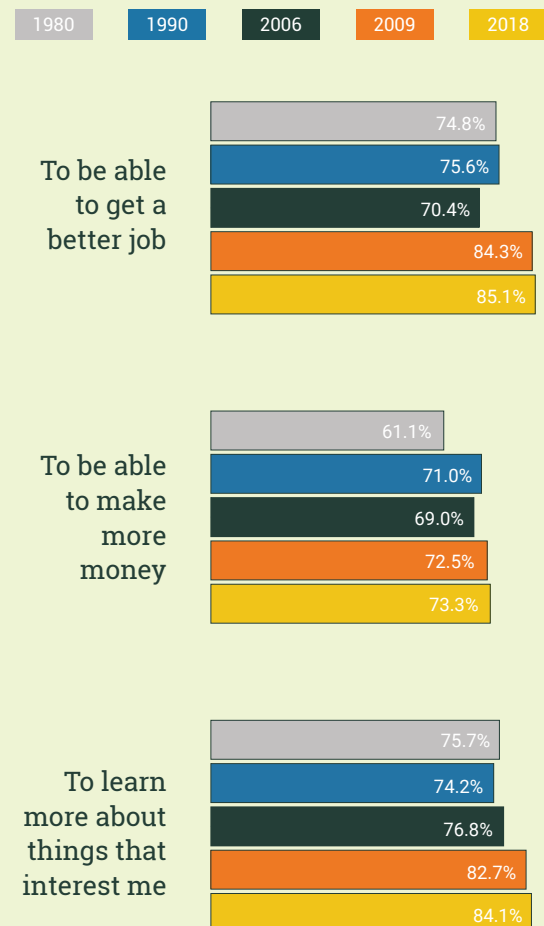
[The Higher Education Research Institute's 2018 Survey on the American Freshman](#), which was [published in 2019](#) and records the attitudes of incoming freshmen attending four-year public and private universities, shows 85.1 percent of respondents agreed that a "very important" reason for attending college was to get a better job. The second-closest reason, at 84.1 percent, was to "learn more about things that interest me." Also high on the very-important list is "to get training for a specific career" at 79.5 percent and "to make more money" at 73.3 percent. Less valued was to "make me a more cultured person" at 51.5 percent. Evidently, top of mind for students is a career that pays.

Because this survey has been issued annually for decades, it's possible to see if this emphasis on pay and employment as a top reason for attending college has been a constant. [Responses in 1990](#) were similar to those in 2018: roughly 76 percent wanted a better job, and 71 percent wanted to earn more money. Second, at 74 percent, was

wanting to learn new things. [In 1980 as well](#), among the top "very important" reasons to go to college were to get a better job, "make more money" and "learn about things that interest me."

What's notable is that in recent years, the share of respondents saying finding a better job is a very important reason for attending college has risen. HERI released a trends report a few years ago that showed the Great Recession catapulted this reason to greater

Top reasons freshmen attending baccalaureate institutions named as "very important" for deciding to attend college, select years



Source: The American Freshman Survey, Fifty-Year Trends 1966-2015 and National Norms Fall 2018  
Higher Education Research Institute

importance for more respondents. In 2006, 70 percent said it was very important for this reason. In 2009 it jumped to [84 percent and has hovered there since](#).

Another trusted barometer of public attitudes about college is the ongoing Gallup survey. It's an industry unto itself, with several series of results that paint a complicated picture about the relationship students and graduates have with the colleges they're attending or have completed.

Jobs are the top reason for attending college, yet roughly two-thirds of students have some or considerable doubt that their education will land them a meaningful early career. About a third of the 32,000 U.S. undergraduates [surveyed by Gallup and Strada Education Network in 2019](#) said they "strongly agree that they will graduate with the knowledge and skills they need to be successful in the

job market." Another 37 percent somewhat agreed.

That doubt isn't misplaced. In 2018 the National Association of Colleges and Employers [surveyed recruiters](#) and recent graduates on the eight competencies NACE has determined are vital for the workforce and that colleges should prioritize in their efforts to make students more employable. On just two of those eight items did recent graduates rate their proficiency similarly to how recruiters rated them: teamwork and collaboration was one and digital technology was the other.

Some of these definitions may mean different things to employers and professors. "Critical thinking in an academic sense would be somebody who's going to defend their doctoral dissertation and your job is to just rip it to shreds," said Brandon Busteded, president of Kaplan University Partners and formerly a

## Perception of Proficiency in Career Readiness Competencies, Employers and Students

COMPETENCY	% OF EMPLOYERS THAT RATED RECENT GRADS PROFICIENT*	% OF STUDENTS WHO CONSIDERED THEMSELVES PROFICIENT**
Professionalism/Work Ethic	42.5%	89.4%
Oral/Written Communications	41.6%	79.4%
Critical Thinking/Problem Solving	55.8%	79.9%
Teamwork/Collaboration	77.0%	85.1%
Leadership	33.0%	70.5%
Digital Technology	65.8%	59.9%
Career Management	17.3%	40.9%
Global/Intercultural Fluency	20.7%	34.9%

Source: National Association of Colleges and Employers

\*The percentages corresponding to "rated proficient" represent, among all responding employers, the percentage who, on a five-point scale, rated recent graduates either "very" (4) or "extremely" (5) proficient in the respective competency.

\*\*The percentages corresponding to "considered proficient" represent, among all graduating seniors from the Class of 2017, the percentage who, on a five-point scale, considered himself/herself either "very" (4) or "extremely" (5) proficient in the respective competency.

partner at Gallup who led its education work, during [a fall 2019 STEM conference](#) on the future of work. "But a lot of times when you talk to folks in the employment side of things, they're talking about problem solving, original thinking, coming up with a new idea, new way around things. It's not tearing down an idea."

While NACE has its eight indicators for career readiness that employers can use to grade students, Gallup has another set of indicators that, in short, grade the colleges. The survey giant has landed on six experiences, listed at right, that are vital for a graduate to have if they're to think that their college experience was valuable. Such a measure may be broad, but no college wants to have a negative value proposition. That can hurt enrollment through bad word of mouth, limit alumni giving and indicate that the experiences most associated with a happy life and career were missing at one's alma mater.

Half of the students Gallup surveyed said they had one or zero of these experiences. Seventeen percent had four or more in their time at college.

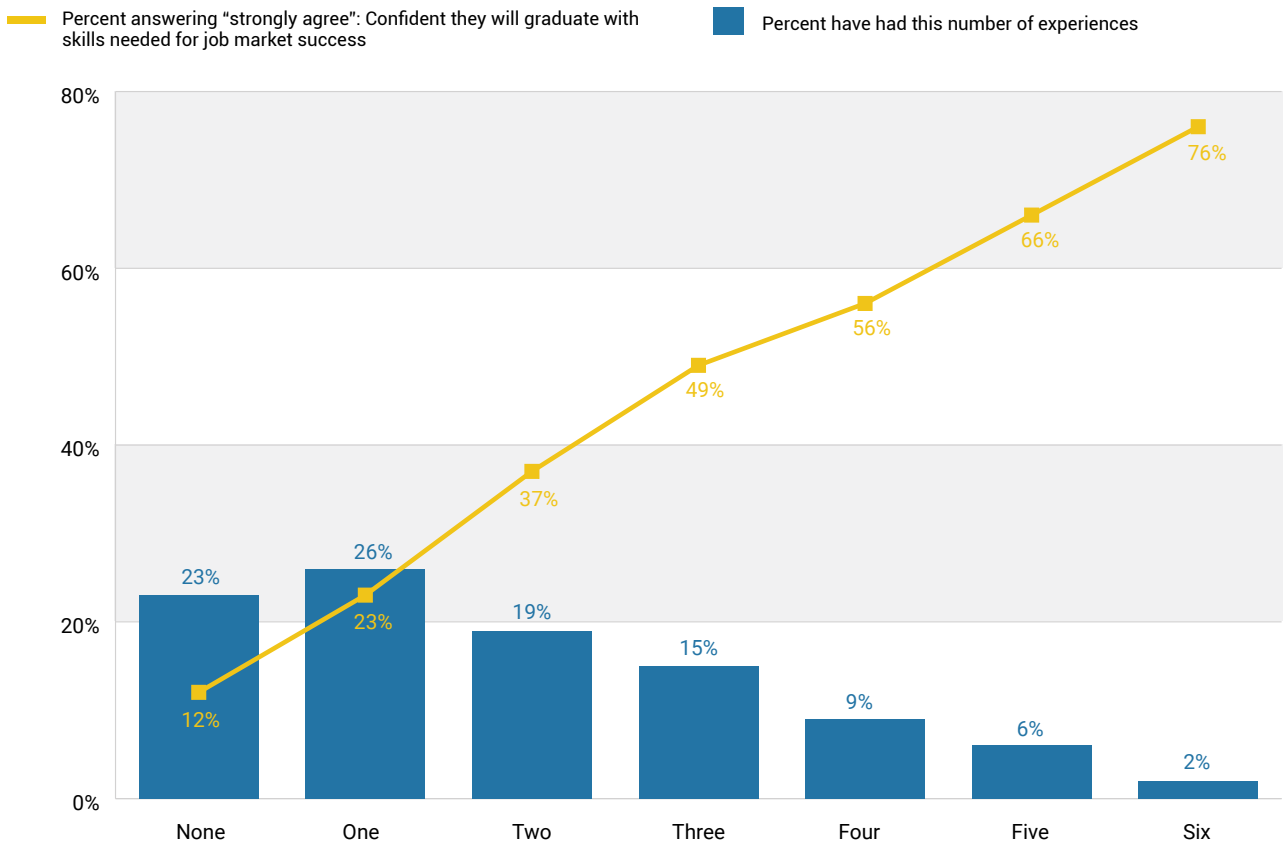
The more experiences students claimed to have, the higher their confidence that they "will graduate with the skills and knowledge they need to be successful in the job market," the report for the survey said.

Improving on these indicators has benefits for students' career prospects and how the colleges are perceived. Establishing mentoring programs and more incentives or expectations that faculty develop "supportive relationships" with students is one Gallup recommendation. In the 2019 survey, just a quarter of students strongly agreed they had a mentor who encouraged them to pursue their goals and dreams.

## Gallup's six experiences vital for college graduates to feel confident about the job market

- 1 I had at least one professor at [college] who made me excited about learning.
- 2 My professor(s) at [college] cared about me as a person.
- 3 I had a mentor who encouraged me to pursue my goals and dreams.
- 4 I worked on a project that took a semester or more to complete.
- 5 I had an internship or job that allowed me to apply what I was learning in the classroom.
- 6 I was extremely active in extracurricular activities and organizations while I attended [college].

## Students' Job Optimism Rises with Key Collegiate Experiences



Source: Strada-Gallup College Student Survey

"Number of experiences" reflects the number of student support/experiential learning experiences students strongly agree they have had.

[As Busted wrote in 2014](#), alumni who experienced the three emotional support elements of the six key collegiate experiences Gallup measures are twice as likely to report that "they are engaged in their work and thriving in their overall well-being."

Discussions about careers and how lessons in the classroom translate into workforce readiness are also strategies colleges can adopt to enhance their value in the eyes of students.

In short, students want to see that college has value. Parents do, too, though right now, they are skeptical that the price tag is worth it.

According to a [Kaplan University Partners](#)

[survey in 2019](#), 57 percent of parents with a child in K-12 think college costs don't justify the value of the education colleges provide. Finding a meaningful career is increasingly tied to a student's notion of a college as being valuable. Therefore, for college leaders to demonstrate to past and future students that it is worth the investment to attend their institutions, students should have confidence that they'll experience the qualities of school that are associated with securing good careers. As such, it behooves colleges to demonstrate their job-readiness bona fides.

Giving students work opportunities is one approach.

According to NACE data, 93 percent of employers indicate that career-related experiences, including internships and co-ops, are essential in their candidate selection. In fact, "a candidate with internship experiences and a lower GPA is in some cases preferred over a candidate with a higher GPA and no internship experience," says Matthew Brink, assistant executive director at NACE.

In his 2015 book *Will College Pay Off? A Guide to the Most Important Financial Decision You'll Ever Make*, Cappelli wrote that "the fact that there is not as much campus hiring in the corporate world now means that much of the hiring that does take place happens informally." Colleges can remedy that by creating work opportunities for students by increasing their interaction with employers through internships and co-ops. He called co-op programs, where what students learn in the classroom is linked to job placements while students are still enrolled in college, "widely recognized as effective in helping students prepare for the job market."

According to 2019 NACE survey data, 44 percent of graduating seniors with internship experience who applied for a job received at least one offer of a full-time position, compared to 27 percent of graduating seniors without internship experience who applied for a job. The median salaries of recent graduates also differ, as those with internship experience report having starting median offers of \$52,400 compared to \$42,500 for recent graduates with no internship experience. The boost to wages and job prospects might be catching on among students; between 2007 and 2019, the share of graduating seniors reporting having had an internship or co-op

grew from around 54 percent to 65 percent.

The problem is that these arrangements are difficult to develop. Large-scale programs that allow any interested student to receive an internship require a great deal of campus coordination. The average higher education institution isn't "thinking very carefully about the work readiness of graduates," said Busted in an interview. Employers are "very specific about what they mean. And they want somebody who's already had some work experience, and they want somebody with some basic technical skills."

At the same time, "there's some real guilt and blame to lay on... large, medium and small employers for not stepping up to the table more and offering more internship experiences for students," he says. If the chief complaint of employers is that recent graduates lack job experience, "guess how they get that," Busted says. "This is as much a kind of cold slap in the face for employers as it is anything for higher ed."

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Brandon Busted  
President  
Kaplan University Partners

## Is there a skills gap?

A 2018 survey by the large employee staffing firm [ManpowerGroup](#) found that “more employers than ever are struggling to fill open jobs.” It noted that 46 percent of employers in the U.S. “say they can’t find the skills they need.” For firms with more than 250 employees, 67 percent were “reporting talent shortages in 2018.”

That sounds dire, but actual skills shortages have little to do with it. Just 19 percent of employers surveyed as to why they struggle to fill jobs said the reason was because “applicants lack required hard skills.” The top reason was that not enough applied for their openings (29 percent). Another 20 percent said the reason was lack of experience.

Brink of NACE says there isn't so much a skills gap as there is a “competency gap,” referring to the job recruiters' assessments of the eight work-readiness competencies college students should have.

“There are skills gaps,” says Matt Sigelman, CEO of Burning Glass Technologies, a major labor market analytics firm that has produced numerous reports on how colleges could better prepare students for the workforce. “We tend to refer to the skills gap in the singular. And in fact, there are many different gaps, because there are many different skills.”

To be sure, a skills gap isn't the same thing as an imbalance between the supply of workers and employer demand. Many jobs are just undesirable despite a ready pool of skilled talent—such as truck drivers. This “is why Walmart is offering up to \$108K to truck drivers, and still has vacancies,” [noted](#)

[one Harvard Business Review](#) article from November 2019.

Other professions have stark skills gaps, where the available pool of talent isn't enough to fill employer demand. Some 85,000 workers in the U.S. have a CISSP certification for cybersecurity even though there's demand for 112,428, said Sigelman, citing Burning Glass data. Contributing to the paucity of credentialed workers is the requirement that CISSP holders, a leading designation in the field, must have five years of [work experience and pass an exam to receive certification](#).

Demand for data scientists grew 31.5-fold between 2012 and December 2019, according to another Burning Glass finding. With such extreme spikes, “it takes a while for supply to catch up,” Sigelman says.

Other times, “the pipeline of talent is really long and therefore it's kind of like turning an aircraft carrier,” he says. Medical professionals that hospitals are desperate to hire come to mind, their demand accentuated by an aging population. No matter how many more students enroll in programs for nurse practitioners, the lag between education and current demand is measured in years.

These are examples for which “you'd be hard-pressed to put the blame on colleges,” Sigelman said. But there are plenty of examples of students “graduating into a field where they're missing some of the skills, where they're a couple of cards short of the full deck.” Certain majors, especially in technical fields that are more applied than the humanities but aren't traditional science, technology, engineering or mathematics—STEM—are sending graduates out with incomplete skills, he says.

In [an October 2018 report put out by Burning Glass](#), authors sounded the alarm that while students often pick applied or vocational majors to raise their career prospects, “many of these majors, including popular majors such as business, legal studies, and public administration, have some of the highest underemployment rates.” These “non-licensed occupational” majors account for 40 percent of all graduates and have grown in popularity faster than other fields. Since 1970, liberal arts majors declined by one-third, STEM majors increased by 11 percent and other applied majors jumped by 80 percent.

The fact that many of the occupational majors lead to chronic underemployment is tragic, Sigelman says. “You only become a business major because you think it’s practical. You’re not doing it for self-actualization,” he says.

Cappelli has a different view of the matter. “The problem with a skills gap is that it’s never defined,” he says. “Usually it just means that employers aren’t getting what they want at the wages they want to pay. That’s life, it’s not a policy issue.” To him and others, if employers are struggling to hire, the causes aren’t because of skills deficiencies but market factors—unemployment is low and workers for the first time in a decade get to be selective about for whom they work. Another factor is that employers have added new demands to existing jobs and they’ve dramatically curtailed worker training.

Cappelli paints the skills-gap literature with a healthy bit of cynicism—or, depending on your perspective, realism. In a 2015 National Bureau of Economic Research article, he argued that reports pointing to insufficient supply of skilled workers are written by

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Wharton School, University of Pennsylvania

producers with a “material interest in the outcomes of the policies they are attempting to influence.”

In general, surveys asking employers if there are skills gaps shouldn’t be trusted, he says.

A finding that says employers are struggling to hire people they want doesn’t tell the public much, because it obscures the reasons behind that difficulty. A more compelling question is whether employers aren’t able to find qualified workers when they look on job boards. If that’s the case, an appropriate follow-up question is what are the qualifications the employer is unable to find?

"Typically they want incredibly specific skills, like five years of experience working with this machine tool and understanding the problems of this particular client," Cappelli says. "And in those circumstances, you have to ask yourself, 'Why would you ever expect that somebody outside your own company would ever have those attributes?'"

Such a skills mismatch can be seen as the fault of existing business practices. Companies have largely abandoned their talent-development pipelines. Whereas until the 1970s, 90 percent of openings were filled in-house, [in 2015 it was closer to a third. This is despite the fact](#) that workers who are hired externally receive lower performance evaluations within their first two years on the job than workers hired internally. They're likelier to quit, too. All that inefficiency paradoxically also translates into external hires earning 18 to 20 percent more than internal workers.

The care invested in finding the right candidate has gone by the wayside, too. Cappelli wrote about the lousy hiring practices of current companies in a *Harvard Business Review* article in 2019. "Figuring out what the requirements of a job should be—and the corresponding attributes candidates must have—is a bigger challenge now, because so many companies have reduced the number of internal recruiters whose function, in part, is to push back on hiring managers' wish lists," he wrote.

Employee training has also tanked, and it's unlikely to come back. [A 2015 study](#) determined that there was a 28 percent decline in the incidence of employer training between 2001 and 2009. An Accenture [survey of employees in 2012](#) found that only 21 percent

received formal training from their employer in the past five years. And [The Wall Street Journal in April 2019](#) observed that another more recent "Accenture survey of 1,200 executives found that, while nearly half say skill shortages are a major concern for the future of their firm, only 3 percent said they will significantly increase their training budgets over the next three years." Surveys that try to get at this issue are of varying quality, too. Asking employers that question leads to imprecision. Some may think informal training counts. Others with management training or executive training will say yes, overlooking the scant training their front-line workers receive.

Moreover, companies "are bad at figuring out what they really need" and they're "bad at figuring out who actually has the ability to do these jobs," Cappelli says. Employers generally look at two criteria for measuring their hiring: Did they fill the position quickly and did they do it cheaply? If they hire workers they're unhappy with, "then the obvious response is, well, you didn't ask for good—you asked for cheap and fast."

There are exceptions, typically around the trades and in sectors that still have a strong union presence. In building and construction, unions broker deals with contractors to fund the training of workers through apprenticeships, committing thousands of hours and billions of dollars to sustain a highly skilled workforce. In Illinois, all the apprenticeship programs in construction would represent the seventh-largest private postsecondary institution, totaling 10,800 participants in 2015, said a study co-written by Robert Bruno, professor of labor and employment at the University of Illinois at Urbana-Champaign.



At least for workers in construction apprenticeship programs, “enrolling in a registered apprenticeship program is a better option than attending college or university,” [the paper concluded](#).

Apprenticeship programs have a market benefit, studies in Europe and the U.S. have shown. [A 2012 Mathematica analysis](#) that compared apprenticeship programs across 10 states with varying levels of unionization found that, on average, the government’s return for funding apprenticeship programs is \$27 for every dollar invested.

The U.S. could supersize its apprenticeship footprint, a White House task force [at the Department of Labor](#) noted in 2018. It relied on a 2017 Harvard Business School analysis of skills employers seek and the roles apprenticeships play. The Harvard report, a joint effort with Burning Glass, pointed to fields beyond the trades that could be fertile ground for apprenticeship models, such as shipping clerks and solar panel installers, that in total could triple the number of apprenticeships in the [U.S. and fill up to 3.3 million jobs](#).

But apprenticeships are still a small share of total U.S. workforce training. In fiscal year 2018, [there were about 585,000](#) active apprentices in the U.S., up from 500,000 in 2016. Also in 2018, approximately 71,700 apprentices graduated from their programs. Community colleges in the past couple of decades began investing in apprenticeships, as well, to signal their market relevance to students. In the nation’s most populous state, the California Community Colleges Board of Governors [approved \\$10 million](#) in apprenticeship funds in November 2019 that should

create 500 positions. The state’s governor in January of this year proposed \$83.2 million in additional funding for apprenticeships and instruction.

Yet that’s hardly a dent in the state’s workforce needs. Higher education, [with its 20 million students](#), is by far the bigger driver of workforce training in California and across the country.

Looking into the future, it’s true that the economy will demand greater levels of education for the jobs of the next decade. But most jobs will still be concentrated in fields that don’t require more than a high school diploma. [Today, roughly 63 percent](#) of jobs are in fields that don’t require a college degree, according to the Bureau of Labor Statistics. Its 10-year projections, released in the fall of 2019, say that jobs requiring bachelor’s and associate degrees will each grow by over 7 percent. The growth is smaller for positions needing just a high school diploma or below.

Whether the growth in positions requiring a college degree will translate into wage growth, or even reduce wages for college-educated workers, is an open question. As more Americans have acquired a postsecondary education, income for workers with a bachelor’s degree has stayed virtually flat since 2000, according to [a 2019 report on real wage growth since the 1970s](#) from the Congressional Research Service. After rising from \$26 an hour to \$28 an hour between 1980 and the start of the new millennium, bachelor’s recipients have seen their hourly wages grow by just 33 cents since, adjusted for inflation. In fact, wages for college graduates remained below their new-millennium

Typical entry-level education	2018 Employment		Employment change, 2018–28 (percent)	Median annual wage, 2018 <sup>(1)</sup>
	Number (in 000s)	Percent distribution		
Total, all occupations	161,037.7	100.0	5.2	\$38,640
Doctoral or professional degree	4,382.9	2.7	9.0	\$105,700
Master's degree	2,685.1	1.7	13.7	\$73,580
Bachelor's degree	35,479.2	22.0	7.7	\$73,960
Associate's degree	3,572.6	2.2	7.9	\$53,700
Postsecondary non-degree award	9,993.1	6.2	8.2	\$38,640
Some college, no degree	4,105.6	2.5	1.4	\$35,820
High school diploma or equivalent	62,426.8	38.8	2.9	\$37,020
No formal educational credential	38,392.3	23.8	5.0	\$24,430

(1) Data are from the Occupational Employment Statistics program, U.S. Bureau of Labor Statistics. Wage data cover non-farm wage and salary workers and do not cover the self-employed, owners and partners in unincorporated firms, or household workers.

Note: The occupational employment and growth rates shown in this table include projected growth in all jobs from 2018-28, not just entry-level jobs. Entry-level education reflects 2018 requirements—BLS does not project educational requirements.

Source: Employment Projections program, U.S. Bureau of Labor Statistics

highs for much of the time following the Great Recession, declining in the aftermath of the economic crisis and only recovering in recent years.

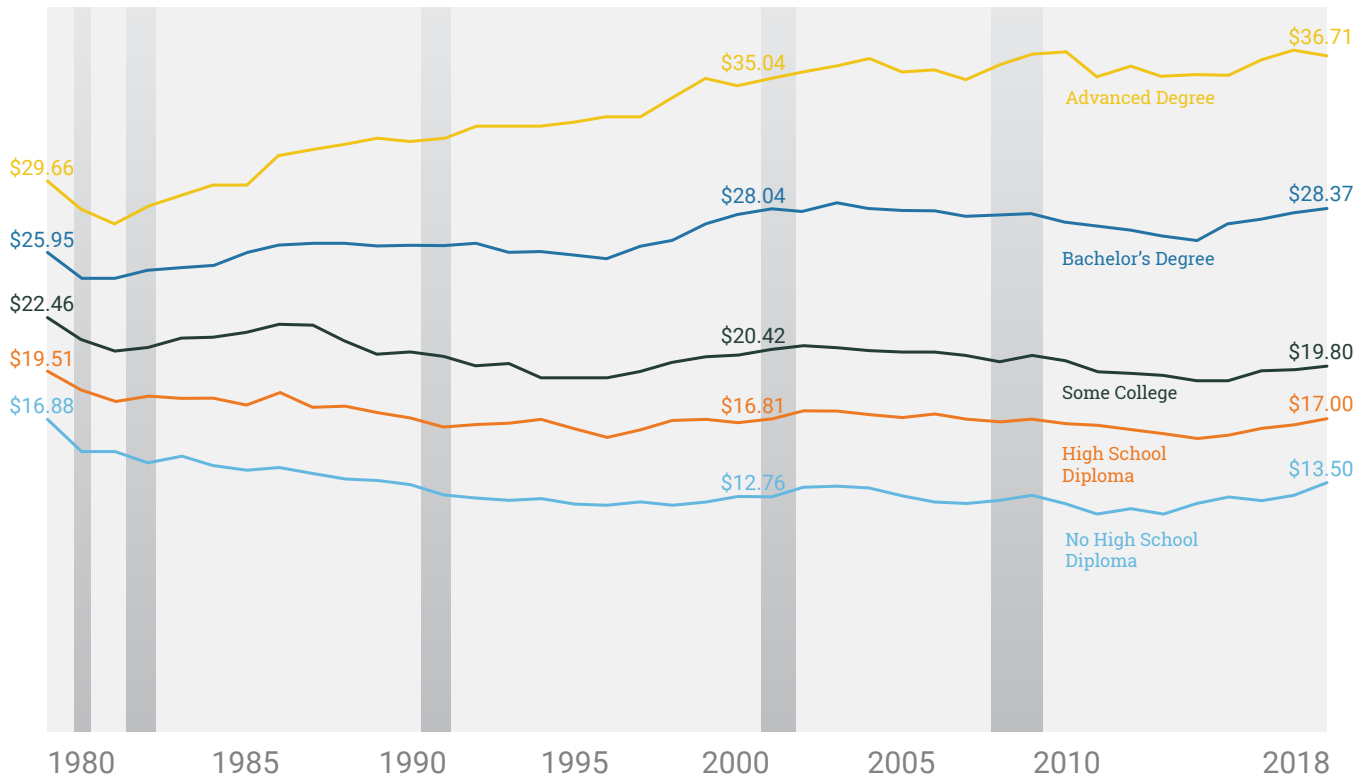
One explanation for why wages among the college educated are basically flat is because a large share of graduates aren't in jobs that actually require a degree. "There is a meaningful skills gap in the other direction," said Heidi Shierholz, an economist with the Economic Policy Institute. They're too educated for the jobs they have.

[According to the](#) Federal Reserve Bank of

New York, 41 percent of recent college grads are underemployed, defined as the "share of graduates working in jobs that typically do not require a college degree." Graduates fit that definition if less than 50 percent of the people working their particular jobs say a bachelor's degree isn't necessary.

That 41 percent figure matches the underemployment rate of recent college grads just before the Great Recession wrecked the job market. For much of the post-recession recovery, the underemployment rate for recent grads stayed several percentage points

## Median Real Wages by Educational Attainment (wages in 2018 dollars)



Source: Congressional Research Service estimates using Current Population Survey Outgoing Rotation Group data for 1979-2018. Recession data (in gray) are from the National Bureau of Economic Research, at <http://www.nber.org/cycles.html>

Notes: Sample comprises nonfarm wage and salary workers who are 25-64 years old and provide sufficient information to compute an hourly wage. Periods of recession are shaded in gray. Dollar amounts are adjusted for inflation using the CPI-U.

higher, peaking at 46.3 percent in 2014.

A job after college that doesn't require a degree can mean long-term underemployment. According to a 2018 Burning Glass report, [more than 40 percent](#) of adults are underemployed straight out of college; 21 percent remained so 10 years later by being in a job for which a bachelor's wasn't necessary. It's an earnings difference of about \$10,000 annually.

The skills gap can also be induced by employer whim. "Employers are increasing their skill requirements during recessions when workers are plentiful and essentially they can be

very picky and put more requirements on their job ads to either weed people out or to get the best available candidate in the market," says Alicia Sasser Modestino, an economics professor at Northeastern University and one of the authors of a [causal study showing these findings](#). Though the paper was hyped by [some journalists](#) as evidence that the skills gap is made up, a conclusion Modestino refutes, the study does show employers' actions create skills mismatches where there weren't any before.

A second study by Modestino and several other co-authors shows the inverse. As the economy improved, the share of job postings

requiring a bachelor's degree or five years of experience or more declined. By 2014, the last year of the study's sample, job postings requiring a bachelor's degree declined to around 27 percent from a high of roughly 32 percent in 2012. That's still about seven points higher than the share of such openings in 2007, but the trend is clear. The loosening of educational standards was also more pronounced in areas that had lower unemployment rates, the study said.

Pockets of technological skill gaps seem to linger well after the recession, however. Modestino's latest research, a working paper informed by nearly 160 million job posting records from Burning Glass between 2007 and 2017, homes in on the role technology plays in widening the skills gap for positions that require a bachelor's. It finds that employers continued to demand software skills during the economic recovery, although they did so more often for high-skilled positions than for middle- and low-skilled positions—where the need for upskilling was temporary. That left many prospective workers in high-skilled fields flat-footed, particularly the ones who weren't in college to acquire the new skills employers demanded.

Another study indicates that the pressure to learn on the job can drive exceptionally talented workers out of those fields. [Two Harvard scholars showed](#) in a 2019 paper that “the initially high economic return to applied STEM degrees declines by more than 50 percent in the first decade of working life.” The paper also predicts that “the highest-ability individuals will major in STEM and enter STEM careers initially, but that they will be more likely to exit STEM over time.” The

cause is new employer demands for skills that make the old skills obsolete.

## What should colleges do to prepare students for the workforce?

The perceived skills gap has compelled colleges to shore up their career training in myriad ways.

“I think higher education is reacting to this perception,” Brink says. “Some of this work focuses on institutionwide approaches to implementing competency-based initiatives both in curricular and co-curricular experiences.”

A nascent effort to align academics with workforce expectations is happening across all types of institutions, public and private. The forces behind this embrace of workforce competencies come from different directions, experts say. Demographic changes mean fewer well-off students will be available for colleges to enroll. In their place will be more students who are increasingly skeptical of the high cost of education, given their own modest abilities to pay for college. As survey data point to job security as the chief reason families want students to attend college, higher education institutions feel compelled to underscore their job-preparing bona fides in addition to the tried-and-true talking points that a postsecondary education confers life-long enrichment and curiosity.

Colleges are “seeing this as a competitive advantage if they’re implementing this at an institutionwide level,” Brink says.

The responsibility for career readiness is slowly expanding beyond the career services center and being taken up as a priority for the university or college at large.

Strategies include more deliberate placement of students in work opportunities. Colleges are also committing to mission statements to ensure all students either work or take on long research projects, echoing the six collegiate experiences Gallup identified as being important for a graduate to have in order to view time in college as valuable.

“What are the magical ingredients that make this thing called education work? It is the merger of work and education,” Busted said at the 2019 STEM conference.

Another major undertaking at some colleges is course-mapping projects, wherein the career center and academic deans meet to identify broad skills employers want in recent graduates and to ensure academic programs offer those skills. What that looks like differs from campus to campus. Some teach students to articulate their academic know-how in employerspeak with the help of career advisers. Other approaches include fusing seemingly disparate disciplines like English and computer science into combined majors. Northeastern University, a leader in work-based education through its co-op model—in which 97 percent of students participate—has introduced nearly 200 of these combined majors. In still other cases, colleges create boot camps between terms to [prepare students for the workplace](#).

NACE holds a competency symposium with representatives from around 120 colleges who then bring back to their campuses ideas for inserting competencies into academic programs. A portion of those colleges have already begun to make progress, Brink says.

Some of the reform to better align workforce readiness and academics is seen in the organizational charts of colleges. NACE’s survey of college career officers shows an uptick in the number of career department heads who have elevated titles or report to the campus president or provost. Three years ago, 13 percent of NACE respondents said they had elevated positions. In 2019 it was closer to a third. In other cases, “4.1 percent of institutions have fully integrated their career and academic advising offices, while about 40 percent see a strong relationship between the two offices,” [the 2019 NACE survey said](#).

An expanded career services role on campus can also include assessments of key experiences meant to develop competencies employers want. If a college has a leadership program on campus, staff could measure a student’s leadership qualities before the program and after to determine whether the college is effective in its mission of honing that competency and associated skills. Another institution could do the same with internships. NACE is part of a career readiness pilot program incorporating the NACE career readiness competencies into a skill survey assessment tool. It aims to validate specific behaviors associated with the competencies deemed essential by NACE employers.

All this effort is in the service of students but also in preserving the goodwill higher



Source: Association of American Colleges and Universities

education has among businesses. Nearly two-thirds of executives and hiring managers “express quite a lot or a great deal of confidence in colleges and universities,” a [2018 Association of American Colleges and Universities](#) survey found. That’s a more generous appraisal [than the public as a whole](#) had in 2018.

But those same employers worried college students lack the skills to move along in their careers, even if they’re ready for their first jobs. Roughly six in 10 executives and hiring

managers believed students had all or most of the skills needed to succeed in an entry-level job, [but between a quarter and a third](#) believed the recent grads they hired had the goods to earn a promotion or advance in the company.

Employers since the 1990s have been citing the same shortcomings in employees, many having little to do with technical skills, Cappelli says. He gives a list of oft-cited gaps: critical thinking and writing, acting like a grown-up, showing up on time, and so on. “The change is not what the individual employers are saying,” Cappelli says. “What’s new is the kind of punditry class and the popular business discussion about what we need today and what jobs will be like in the future.”

The liberal arts already offer so-called hard skills the punditry class says future workers need through courses in math and science that are mandatory in core curricula. Experts struggle to make the distinction between an education that imparts students with skills versus teaching students to use particular tools, though. Courses that expose students to specific data or programming tools shouldn’t be the domain of colleges, Cappelli says. He supports college courses that teach theory and practice but is skeptical of those focused on specific software.

“The software systems change pretty quickly. That’s training. It’s not education,” Cappelli says. If an employer asks for specific programming or software skills, seek it out through far cheaper alternatives such as online tutorials or community colleges. In his view, courses dedicated to teaching students workforce training take away from time they could be writing or researching.

With the exception of select STEM disciplines, the liberal arts disciplines perform on par with other majors in the labor market. If anything, the general emphasis on STEM needs to be revisited.

In 2015, during the height of the STEM-shortage narrative, [the Bureau of Labor Statistics published a scholarly essay observing](#) that the STEM shortage is heterogeneous—some private sector fields have certain shortages of qualified workers while academia has an oversupply of other STEM postgraduates. “Software development, as well as... high-growth areas such as mobile application development, data science, and petroleum engineering” are what some employers craved. Academia might embrace some STEM graduates who have doctoral degrees but can't find work. Elsewhere in the private sector, “there is an abundant supply of biomedical, chemistry, and physics Ph.D.'s; and transient shortages and surpluses of electrical engineers occur from time to time.”

The BLS paper pointed to [a longitudinal analysis from the U.S. Department of Education showing](#) higher wages and employment rates four years after graduation for workers who majored in computer science and engineering versus other STEM majors such as math, physical sciences and biology. According to the BLS paper's analysis, while engineers and computer science majors had employment rates of 77 to 83 percent and median incomes around \$66,000 for primary jobs, other STEM majors were employed 71 percent of the time and earned roughly \$20,000 less—figures similar to non-STEM majors.

The dichotomy within the STEM fields applies to the experiences of today's recent graduates.

In 2019 the Education Department released a report on outcomes of students who had graduated in the 2015-16 academic year and where they were a year later. Biological and physical sciences, science technology, mathematics, and agricultural sciences majors had median incomes of \$33,800, much lower than the \$56,000 for computer scientists and \$60,000 for engineers. Humanities and social science majors were also around \$33,000. The non-engineering and computer science STEM majors were also much more likely to be in grad school than their other STEM counterparts.

Sigelman thinks the data show that typical college degree programs aren't off the hook. In 2018 Burning Glass, in partnership with the Business-Higher Education Forum, [identified 14 skills employers seek](#) that are foundational in the new economy. The skills are divided into three buckets—human, business and digital skills—that together signal to employers the most well-rounded of job candidates. It's not that employees—and recent college graduates—have to exhibit all 14 skills. The report says it's unlikely any candidate would need all of those to land a job. Vital, however, is that a candidate demonstrates skills across those three buckets.

The 14 skills are broad but narrow enough to guide colleges and students to become more aligned with what employers want. In the digital bucket, the report says the skills for the new economy are managing data, software development, computer programming, analyzing data and digital security, and privacy. Many job openings outside IT and data analysis ask for these skills. According to the report, 58 percent of openings outside those

technical job clusters seek candidates who can analyze data, and 29 percent want those who can manage data.

“For nine of the skill areas, the majority of job openings are outside of the digital IT and analysis job families, confirming that the demand for digital skills goes well beyond the tech economy,” the report said. In fact, almost 12 million job openings in 2017, or 53 percent of all openings, asked for one of the 14 skills. Possession of these skills comes with various wage boosts, too, the report contended.

But there's a massive disconnect between what employers want and what employees signal, the report said—something recent graduates and colleges would be wise to address.

The report's analysis of millions of posted résumés showed that about a quarter of all candidates in the sample claimed the three most popular skills—business process, communication and critical thinking. Whether that's due to failing to note those skills on one's résumé or not having them at all, “either way this mismatch between the skills signaled by jobseekers and the skill requirements signaled by employers strongly suggests that opportunities are being missed,” the report noted.

The report addressed higher education directly, saying that it must “increase the value of its credentials by teaching these skills in all its disciplines and fields.” That means having faculty adopt these foundational tenets in their coursework, making them a feature of student advising, coordinating with employers and allowing students to have capstone projects making use of these skills.

Cappelli warns of a subtly different disconnect: between what employers will settle for in new hires and what they say they want. “The job ads being posted are not always real,” he says. “If they are real, they are not always accurate as to what the employer really wants

## **Burning Glass—Identified New Foundational Skills for the Digital Economy**

### **Digital Building Blocks**

- Managing data
- Software development
- Computer programming
- Analyzing data
- Digital security and privacy

### **Business Enablers**

- Business process
- Project management
- Digital design
- Communicating data

### **Human Skills**

- Communication
- Critical thinking
- Collaboration
- Analytical skills
- Creativity



or, more accurately, will accept. Are they wish lists?"

A similar [Burning Glass and American Enterprise Institute report](#) looked specifically at labor trends for employees with liberal arts degrees, concluding that "liberal arts graduates, with some additional skills training, can potentially realize earnings comparable to those of their more specialized counterparts."

But Sigelman warns against reforms that are too prescriptive.

He worries deans and professors told which software to use will push back with fears that the technology will become obsolete. Just as core curricula require writing and science classes but give students wide latitude, colleges could do the same with digital skills.

"A curriculum that doesn't prepare students with those broad sets of skills is letting students down," Sigelman says. "I wouldn't say that's driving a skills gap. I think it's driving an employability gap." ■

## Key takeaways

- Top reasons students give for attending college are to find a good job and to earn more money.
- Careerism isn't students' sole motivation. Another of their top reasons for attending college is to learn more about the topics that interest them.
- Be wary of the skills-gap narrative. Not every labor shortage is the fault of colleges. Industries have changed, and some jobs are just not as appealing to workers.
- Some still say colleges are not equipping students with the full suite of skills employers want. Others say employers are bad at knowing what they want.
- Sweeping generalizations about STEM fields miss the mark. Some STEM majors have higher wages and job-placement figures than others.
- During economic down times, employers request more years of experience, and a higher share of employers request employees with college degrees. Skills requirements drop during economic recoveries.
- Hiring has changed in the past generation. Companies have moved away from hiring from within and training incoming talent, instead deciding to hire more from outside their ranks.
- Hiring dynamics plus a decline in human resources staff make for job postings that can read more like wish lists than actual skills needed to perform a role.
- The economy requires more college-educated workers, but most jobs are still expected to require only a high school diploma for the next decade.
- Apprenticeships are a valuable investment for companies and the public but only a tiny fraction of the education and training pipeline. Higher ed is a much larger generator of future talent.



# Strategies at Public Institutions

Whether there's a skills gap or not, colleges are certainly reacting to perceptions that students are not fully equipped to enter the workforce. How that reality plays out from campus to campus varies.

A scan of the reforms underway at colleges reveals much that is familiar—career assessments, apprenticeships, workshops and meetings with career advisers. Perhaps the key difference between today's workforce-readiness efforts and those from previous eras is intentionality and scale. Doing the same thing for more students is arguably the defining feature of today's work-readiness reforms.

"If I were to wave my magic wand, I would say that you shouldn't be able to graduate from an institution unless you had some applied work experience," says Busted of Kaplan. "Unless you worked on a long-term project that took a semester or more to complete."

As the previous chapter has shown, many students say they haven't really undergone those experiences in college. It's not enough for a college to tout a boutique work-experience program or in-depth study opportunities. Colleges haven't made work experience a requirement or tied it into their program offerings pedagogically for all students, Busted says. As the pressure to align with the world of work continues, Busted predicts that more colleges will offer work-readiness services to all their students.

The much-hyped disconnect between the views of college leaders and those of business executives hinders colleges in their mission of preparing students for careers. The split between the two camps is noticeable but perhaps overstated.

Findings undergirding the impasse between higher ed and business in this post-Great Recession epoch are two Gallup surveys from

2014. [One says that 11 percent of business leaders "strongly agree"](#) that "higher education institutions in this country are graduating students with the skills and competencies that my business needs." [A second survey indicated that 96 percent of college and university provosts agreed](#) that their institutions were effective in "preparing students for the world of work." But additional scrutiny of those findings shows a much narrower gulf.

Among higher education provosts, 40 percent said their institutions were somewhat effective, while 56 percent said they were very effective at preparing students for work. The employer survey, which allowed respondents to pick from five options rather than the four the provosts were given, shows that 34 percent of employers picked options 1 or 2 on a scale where 1 meant "strongly disagree" and 5 meant "strongly agree." Counting 3 and up as neutral or positive, 66 percent of employers had a neutral or positive view of the skills colleges are teaching to students.

The difference is still a big gap between employers and provosts, but it's hardly the inversion of opinion some pundits made it out to be. That doesn't stop institutions from plugging the gap anyway, especially because the public itself has soured on the value of a college education. The change in public opinion is particularly acute in the age group most likely to pursue a postsecondary degree. Between 2013 and 2019, the share of U.S. 18- to 29-year-olds who think college is "very important" tanked—it went from 74 percent to 41 percent, [according to a Gallup survey](#). The age group went from most supportive of higher education to having the least faith in it among adults in six short years.

Higher education knows its reputation has taken a beating. Here's how some of its members are fighting to restore its value proposition among students. First up are public two- and four-year institutions.

## A consortium creates a conduit for change

The Florida Consortium of Metropolitan Research Universities calls itself the first collaboration in higher education of its kind. Given its size, the consortium's efforts should be taken seriously. [Founded in 2015](#), its membership consists of Florida International University, the University of Central Florida and the University of South Florida, the state's largest research universities at the time. They now [enroll 137,433 of the roughly 277,000 undergraduates](#) within the State University System of Florida.

The consortium is focused on both improving student academic outcomes and equipping them with the skills employers want. That doesn't mean its leadership thought the universities were categorically missing the mark on work readiness, however.

"If you can remember back in 2015, there was a lot of discussion about students not ready for the workforce," says Michael Preston, consortium executive director. "We were there to challenge some of those notions of how universities were perceived in developing talent."

The consortium led meetings with faculty representing the three universities to come up with strategies to complement their coursework with work-readiness instruction, make

the classes more user-friendly for students and reach out to nearby employers to establish student work experiences. According to Preston, 110 faculty dedicated 40 hours each over an 18-month period for this effort. The meetings were in the mold of [networked improvement communities](#), an approach to solving problems that includes having clear goals for accomplishments and diagnosing the problems that get in the way of those sought-after outcomes. In this case, the jump from college to careers was under the microscope.

The consortium can serve as a conduit between different projects on which the staff and faculties of the three universities work, from curriculum analysis to embracing key software to bridging the postsecondary-workforce divide.

In 2016 the three universities signed on to Handshake, a career-exploration tool students can use to update their résumés, list academic achievements and connect with employers. It's a service specifically designed for students and recent graduates, allowing them to also scan for job fairs at their campuses, connect with internships that automatically appear in their feeds based on their interests, ask fellow classmates about job-interview experiences, create calendar events and more.

While the three universities serve discrete metro areas in Central and South Florida, students may want jobs beyond their immediate locale, such as a student in Tampa wanting to explore jobs near Miami. The software enables students to find job openings by plugging in their skills or major and matching jobs based on attributes employers want. Handshake increased the number of jobs available to

students by 30 to 40 percent because of the expanded geographic footprint, according to Preston.

Many of the University of Central Florida's computer science courses make signing up with Handshake a precondition for enrollment, which is a good way to prompt students to start exploring the kinds of jobs that are available, Preston says.

The University of South Florida's College of Arts and Sciences convened over a few weeks in 2018 to review its 65 academic programs. Aiding the analysis were job-postings data from Burning Glass Technologies. The tools allow faculty, typically in leadership roles, to research the share of local employers who listed skills that matched the eight competencies deemed important to employers by NACE.

The Burning Glass information has multiple uses. "I use Burning Glass quite extensively when USF is looking at proposing a new degree program or whether to discontinue a program," said Cynthia Brown Hernandez, associate director of system academic planning at the University of South Florida, according to a recent progress report of the consortium's talent-development efforts in which she was quoted.

The project also identified skill sets academic programs offer, even for majors more associated with prolonged stints working the espresso machine than taking corporate conference calls. Data tools provide information on what employers say they want through job postings. Across the consortium, about five dozen staff members have Burning Glass accounts.

The arts and sciences review at USF allowed the women's and gender studies faculty to observe that their students were well prepared with project management skills thanks to a curriculum that focuses on internships and other project-related work.

This process, the skills mapping of departments, is something that the consortium wants every program at all three universities to complete by 2025.

USF's history department determined its students were "well suited to be researchers for insurance companies," Preston said. It can show students they can pursue jobs beyond teaching and academe. At the same time, the department was introducing an optional internship program to fulfill an upper-level course requirement. While not mandatory, some students who've already satisfied their major obligations seek out the internship for applied learning experiences. Other courses have a real-world flavor, such as courses in digital humanities.

The 2018 skills mapping helped inspire the department to consider workforce development and readiness, thereby introducing requirements that touched on developing research, hands-on skills and digital skills that appeal to employers. However, the department was already considering revamping its offerings; the internship program, now in its fourth year, predated those convenings.

"Although we did take part in some of those skills-mapping exercises and looked at the data, our decisions to revise the major were more based on faculty discussions and conversations with our undergraduate advisers about student needs and desires," says Julia

Irwin, associate history department chair at USF.

Internships can include stints at historical societies, museums, libraries or an on-campus digital lab that produces three-dimensional renderings of historical artifacts through tools such as 3-D printers and virtual reality. In fall of 2019, about 25 students were in the internship programs, and Jennifer Knight, an instructor who oversees the history department internship offerings, expects that figure to nearly double in the coming years.

Students could seek out internships before the program was founded, Knight says. But students had to find both the internship opportunity and a faculty member to oversee their experience, which meant few if any actually landed one. Now, Knight works to secure arrangements with Tampa Bay's various museums and other institutions concerned with preserving lessons from the past.

Internship partners can only handle one or two student interns at a time. So USF's history department has students working different internships attend a weekly class led by a faculty member. They go over lessons learned and build camaraderie with other interns. The weekly class makes use of assigned readings, discussion questions and a research project designed to contextualize students' work experience. "I think it gives them a better sense of the public history footprint in our community," Knight says. Tampa Bay doesn't have the public history network that Boston or New York City has, she notes. But the classes can still give students a sense of what's near them.

The internship program grew out of a

campuswide sentiment that there should be stronger linkages between academics and careers, Knight says. She doesn't think internships should be mandatory, as some workforce-readiness scholars and pundits have proposed. The internship program through the history department relies on community engagement, says Knight.

"I don't like the idea of trying to draw in community groups and organizations and businesses and then assign to them students who aren't engaged completely with that work," Knight says.

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"I don't like the idea of trying to draw in community groups and organizations and businesses and then assign to them students who aren't engaged completely with that work."

Jennifer Knight

History instructor

University of South Florida, on why she doesn't believe mandatory internships are fair to employers

Another internship track open to students beyond the history major—such as those in communication, engineering and chemistry—focuses on historical archaeology. As interns, students learn to use virtual reality and 3-D printers to create models of historical artifacts like vases, statues or even ancient city layouts. Students work toward the goal of making the visualizations available to museums that can feature them for visitors like children or those with visual impairments who'd benefit from seeing artifacts up close. Interns learn how to use the hardware and software to create these renderings and, in some cases, attend academic conferences to discuss their work.

The internship is 100 hours a semester, says Davide Tanasi, a professor who calls the fusion of digital technology and understanding historical artifacts "the last frontier of the study of archaeology." He co-founded the University of South Florida's Institute for Digital Exploration, IDEX, in early 2018 as an incubator for digital archaeology projects.

In other instances, students help to disseminate ancient artifacts that are practically hidden from the public. The University of South Florida owns dozens of [Lebanese metal, stone, ceramic and glass goods](#) that date back 3,500 years. Because of space limitations, those possessions are kept from the public. Students help to scan the artifacts' dimensions to post the data online so that other scholars can produce replicas. Students also help to take high-quality color photos that, when merged with data about an artifact's size, can produce three-dimensional models. The real-world applications are numerous.

"The fire which recently destroyed the National

Museum of Brazil was a global wake-up call for curators to start plans for the 3-D digitization of historical and archaeological collections," [Tanasi explained in an article](#).

If he deems some students proficient in studying archaeological data, processing them and then curating them according to international standards, Tanasi invites those students to conduct fieldwork alongside him—either in Florida or in various Mediterranean locations.

The consortium also counts as an early success results of a [\\$4.8 million state grant](#) received by the member universities' engineering programs in 2014. At USF, the money went toward hiring more faculty and tutors to increase the number of computer science and information systems graduates. Graduates in those fields nearly doubled, from 164 in 2012-13 to 295 in 2017-18. Such results led to [\\$5 million in grants from the National Science Foundation to the three universities lasting from 2016 to 2021](#).

The grants' purpose is to "recruit, retain, and provide scholarships" plus offer advising and career mentoring to talented students with financial need in the fields of computer science, information technology and computer engineering.

Preston has worked in higher education for more than 20 years, much of it in student life roles. In his view, students always had the skills for the workforce, but colleges did a poor job of helping them articulate those skills to employers.

Meanwhile, "the conversation at some point between higher education and employers somehow got taken off the rails by some sort

of a parallel narrative that wasn't necessarily true," Preston says. The parallel narrative was that students weren't ready for their jobs.

An expectation that recent graduates are proficient in every task given to them in their first full-time postcollege job is a "level of unreasonable expectations" from some employers, Preston adds.

"I would argue with most employers," he says. "If you go back to when you were 22 or 23 years old, you probably weren't very good at your job when you first started, either."

## Aligning academics and the career center

Skills mapping isn't the only way a campus can inject lessons from the workforce into academics. At the University of Nebraska at Lincoln, staff have been aligning academic and career advising over the last five years. Kick-starting the effort was a leadership observation that workforce needs should be an academic concern, says Bill Watts, associate dean of undergraduate advising and career development.

To underscore this workforce-academic cohesion, the university made the "calculated decision" to move career services out of student affairs and into academic affairs, Watts says. The shift might be subtle, but it changed the organizational structure that's typical at postsecondary institutions, signaling to students, faculty and job recruiters that career advising now is viewed as an academic domain rather than an extracurricular or student-life pursuit.



Across the country, merging academics and career advising is a growing trend.

According to a NACE survey of institutions in 2018, about 49 percent of respondents report that [career services are housed in their student affairs division](#), down from nearly 70 percent a decade prior. Nearly a quarter report to academic affairs. In 2019, a NACE survey showed that [about 4 percent of institutions](#) "have fully integrated" their academic advising and career advising offices; about 40 percent of institutions report a strong relationship between the two offices.

As part of the University of Nebraska at Lincoln's reaccreditation process in 2015, the university created a road map [called the Quality Initiative](#) to better integrate career preparation into the academic curriculum. The accompanying report, the product of two years of meetings among more than 100 administrators, faculty and staff, produced numerous recommendations, such as a revamped senior survey to evaluate their collegiate experiences and jobs following graduation.

Another was "making career and placement data more visible to students" in the course catalog. Proposals included showing students data on job and graduate school placement, internships, skills they could transfer to employers, and professional organizations. The university's research and career staff has been collecting that data to share with academic departments. They in turn posted the relevant information organized by easily recognizable tabs in the online catalog. "So that's the first time we had elevated that kind of data to the catalog," Watts says. He describes the catalog as the "students'

contract" that shows "what they need to do to move from day one to graduation."

The career information tab for the English major portion of the catalog spells out the kind of workforce-applicable language that is readily found in job descriptions and lists of what employers seek. Examples include "Communicate confidently and appropriately with individuals of different cultures," "Research, identify and knowledgeably discuss current issues and trends in the field," and "Perform analysis of social and cultural issues." A list of recent job postings includes assistant editor at a publishing house, grant writer, literary agent, English teacher through the Peace Corps, graphic artist and copywriter.

A senior survey, which helps to inform what's posted in these career tabs by major, is taken annually and includes information about internships students have had and their job or graduate school plans. The survey has a lot of moving parts. First, the university asks all graduating seniors a few weeks before the graduation ceremony to complete the survey. The request is part of a form students complete indicating whether they need a gown and how their names should appear on their diplomas. Because the survey is tied to the graduation ceremony form, the response rate is around 97 percent, Watts says.

Students who didn't fully complete the survey or didn't know their postbaccalaureate plans receive a follow-up survey link typically three months later. Academic programs conduct their own web-scraping projects to learn of students' plans after graduating, such as job position titles on LinkedIn. At the six-month mark, Watts's team also contracts with the University of Nebraska's Bureau of

Sociological Research to run a phone campaign seeking responses from students whose information is still unknown.

Previously, data from those surveys were made public as written reports that viewers could download. This spring, the university will unveil a data dashboard that's interactive for better perusing, Watts says. At this point, the survey does not ask whether the job a student has is one for which a bachelor's degree is needed. Once the dashboard is live, Watts says, the survey will be reviewed to determine what else students should be asked.

Unlike some other campuses, the University of Nebraska at Lincoln is not using its data on where students are hired to test whether academic programs are aligned with workforce needs. Instead, programs are introducing career mindfulness into the curriculum or as stand-alone courses. The business college has a [mandatory one-unit-per-year series of courses](#) focused on career development that includes having students develop a professional social media presence and identify career goals. The classes are described as aiming to develop "professional, confident and polished students for lifelong career success."

The history department makes mandatory two courses—one for sophomores and one for seniors—that introduce career mindedness alongside instruction on research methodologies. Ann M. Tschetter, an associate professor of practice at the university, began adding career exploration elements to the classes five years ago. She works closely with the career coaches to continuously fine-tune the curriculum. As part of their career-exploration component, students in the lower-division

course must attend a career fair and meet with a campus career coach. They create résumés before attending the fall job fair and speak to at least two employers about the skills they want in recruits. Students afterward submit a one-page essay about their experiences.

"I've found that they often have little idea what's actually out there, and once they see different opportunities, they can start to shape their college experiences towards that goal," Tschetter says. She invites faculty from other departments, such as national security and global studies, to talk about their undergraduate experiences and career journeys with the classes.

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"I've found that [students] often have little idea what's actually out there, and once they see different opportunities, they can start to shape their college experiences towards that goal."

Ann M. Tschetter

Associate professor  
University of Nebraska, Lincoln

For the past two years, Tschetter's second-year students have searched the library's archives to find interesting moments in the university's history and written papers placing what they found in a broader historical context.

One student researched the juxtaposition of campus conservatism during the 1920s and the liberal mythos of flapper culture. [Another wrote about](#) the university's pivotal role in standardizing tractor manufacturing during the 1910s, when farm machinery production was accelerating.

"There were numerous cases in which a farmer would purchase a tractor and quickly find themselves in a position with a faulty or underperforming tractor, no way of attaining parts for said tractor, and in some cases, no way of contacting the company," the second student wrote, describing the problem the university's then-chair of the agricultural engineering department sought to solve. Ultimately, due to the chair's lobbying, the state passed a law requiring standardization and inspection of all tractors. The university's Tractor Test Lab inspected all new models before they came to market in Nebraska.

The exercise, assigned as a six- to eight-page final paper, both hones the students' research skills—they must use endnotes and rely on primary sources—and allows them to make original contributions to local history. Their final works are posted on the institution's library website. "The students take great pride in these, and I know students are using these when talking to potential employers," Tschetter says.

Other majors in the arts and sciences also

fuse career mindedness in methods courses. It's a departure from past norms, Watts says. "I'm not sure we engaged students in social sciences and humanities and fine arts in some of those kinds of discussions," he says.

Not every major has such a melding of academics and careers. The process will always be ongoing. "One of our ongoing challenges is to try and develop content and value for our faculty so that they can raise career development with students more often," Watts says.

Academic and career advising services have grown closer thanks to new student record-keeping software. The two departments and other teams on campus that interact with students regularly have access to a student's full record of advising, allowing for a more holistic set of recommendations, says Watts.

"The academic adviser can go, 'Gosh, I saw you were in career advising and talked about a possible internship,'" he says. "'Tell me about what happened there. Is that going to impact what we want to talk about for classes next semester?'"

Through two intensive NACE trainings in the past five years, career and academic advisers were taught to share values around respecting a student's journey. Watts describes it as helping students answer, "Who am I, who do I want to be and how am I going to get there?"

It's those questions that can steer students toward finding themselves academically and as professionals. The questions, Watts says, are a way to sidestep initiatives at other campuses where much of the emphasis is on the first job or a well-paying job. Institutions with

that emphasis “underconceptualize” the students who want to attend graduate school or address social justice issues through work, he says. Because students are not going to have one career for their lifetimes, they need to view their careers as ongoing drafts of an essay or experiment at the lab.

“They need to be ready to test hypotheses of ‘This is who I think I am today and what I think I want to do,’” Watts says. “And then engage in that, test that, learn from it.”

## Career mindfulness at community colleges

At a growing number of community colleges, efforts are also underway to forge stronger ties between academics and career readiness. They offer ideas for two- and four-year institutions of all types.

### New models, tools and ideas

Complete College America, the national advocacy group, is offering one model that emphasizes career exposure early. Its effort is called Purpose First, [which began](#) as a four-year, \$1.5 million demonstration project funded by Strada Education Network. The main goal was to target a student’s first few months of college, including enrollment and class assignments.

Career-related campus offerings, such as internships and in-depth research projects, tend to occur later in a student’s academic trajectory. Purpose First wants to help students

define their “sense of purpose and interest” early on, says Dhanfu Elston, vice president at Complete College America.

For students unfamiliar with the hidden curriculum of higher education, either because they’re the first in their family to attend college or they had few adults in their life who used the vocabulary of institutional knowledge, the college shuffle can feel overwhelming—and can displace more vital conversations about why a student is in college in the first place. A question like “What’s your major?” misses the point when the more direct inquiry should be “What do you want to do?” says Elston. The second question can prompt an adviser to propose an academic game plan that matches a student’s career aspirations.

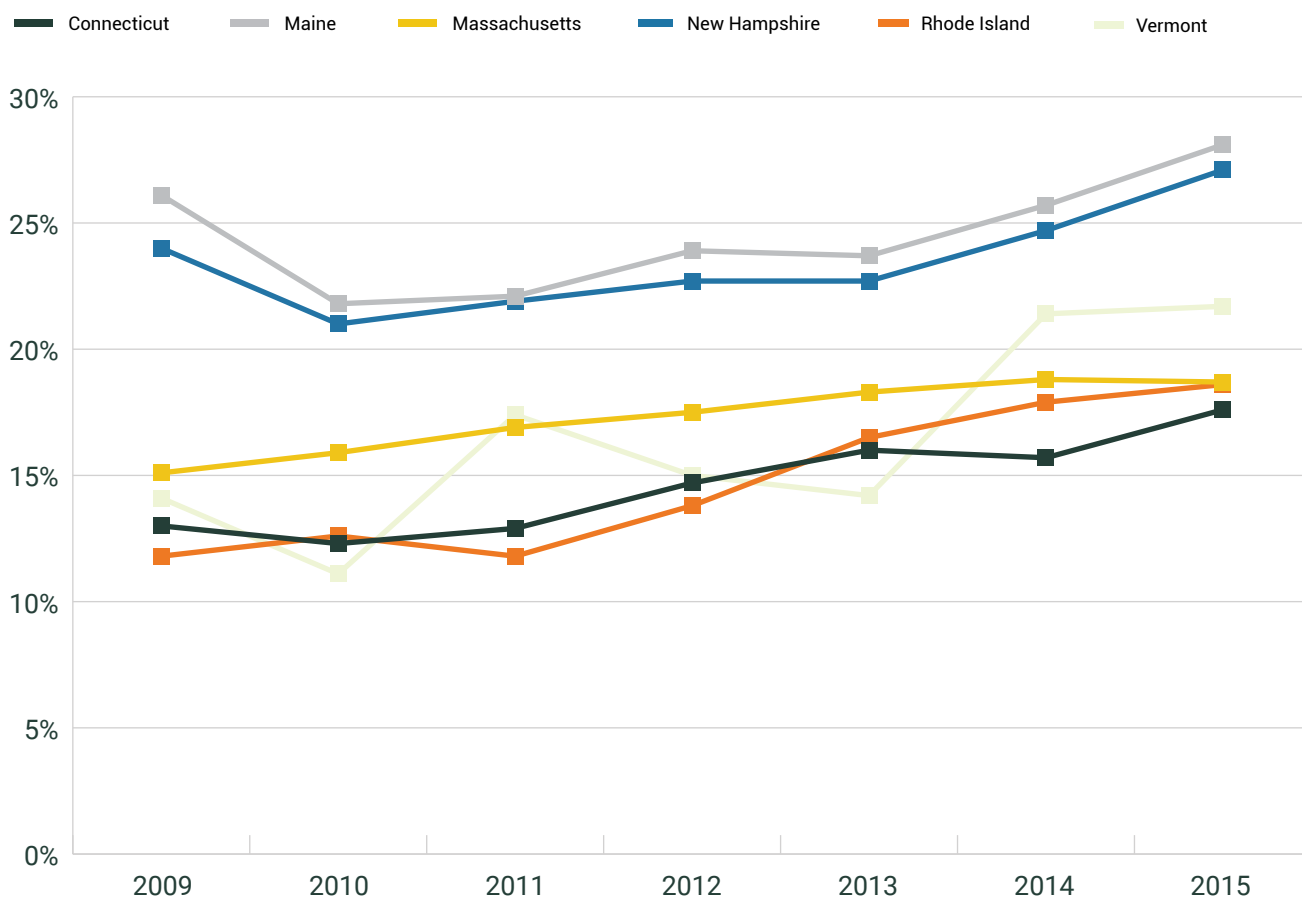
That conversation, “if had earlier, could help many more students validate their interests or invalidate what they don’t want to do,” Elston says.

About 50 colleges, including entire state systems, are formally involved in Purpose First. Other colleges have adopted the concept but aren’t part of the initiative officially.

An ideal onboarding process would involve career and academic advisers being “much more aligned” in how they relate the connection of majors and careers to students, Elston says. Students should also see labor market information.

Better career guidance is “an equity and social justice issue,” Elston says. It can be one way to reverse a national trend in which a greater share of white people are getting good jobs, [according to a wide-ranging 2019 report by the Georgetown University Center on](#)

## Three-year graduation rates of New England two-year public institutions, by year of starting cohort



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Graduation Rates component data.

[Education and the Workforce](#). Based on 2016 data, white workers held 77 percent of good jobs in the U.S., even though only 69 percent of the labor force was white. The inverse was true for black and Latinx workers, who are holding onto a smaller percentage of good jobs than their overall share of the workforce. The center defines good jobs as those paying median wages of \$56,000 for workers without a bachelor's and \$75,000 for those with a bachelor's or higher.

The report's authors cited differing access to selective colleges and universities, employment discrimination, and segregated social and professional networks as some of the root causes of the racial divide in good jobs.

Many good jobs have opened up for workers with a bachelor's degree or higher. White workers have been particularly adept at leaving middle- or low-skilled jobs for ones that pay more. The "cumulative effect of White workers' shift toward good jobs on the bachelor's

degree pathway is that while overall White employment grew by 1.9 million between 1991 and 2016, the total number of good jobs held by White workers grew by 7.5 million," according to the report.

Multiple college departments should be involved in promoting career mindfulness for incoming students, the Purpose First initiative argues.

"The responsibility for putting purpose first must be shared across stakeholders—registrars, admissions officers, academic advisers, student affairs professionals, career services professionals, faculty members and employers—and bring these groups together," the CCA report said.

This might sound like a plank in the guided pathways strategy, an approach to course selection that allows students to pick a broad area of concentration and earn a degree or certificate with a clear understanding of the courses they need, strategic advising throughout their time in school and early exposure to career trajectories. That's because the two concepts—Purpose First and guided pathways—inform one another. Community college students in particular are known to wander the academic desert, enrolling in classes that ultimately aren't needed for their majors. In several states for which data are available, such as California, students with an associate degree accumulate around 90 units at the time of graduation—50 percent more than what is typically needed for a two-year degree.

Limiting choice may run afoul of common U.S. notions about individualism, but too much choice of courses can be a bad thing for some

students with limited means or little exposure to the college-going shuffle. [A 2018 working paper](#) by Kevin J. Dougherty, a professor at Teachers College of Columbia University, argued that "the provision of many choices produces social inequality" and that "we know that providing high-quality information more widely—particularly to less advantaged students—can have a major impact on student choices."

To help reduce the time students spend taking the wrong classes, which has both motivational and financial consequences, Complete College America introduced a seal of approval for technology companies working in the higher education sector in 2016.

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“We know that providing high-quality information more widely—particularly to less advantaged students—can have a major impact on student choices.”

Kevin J. Dougherty

Professor

Teachers College, Columbia University

The designation has its own awards program that recognizes companies with software tools for students intended to decrease time to graduation, that offer systems of reminders and guides so that students take classes tied to their goals, and that provide software for administrators to improve college completion.

Colleges that have embraced such technology have seen evidence more students are on track to graduate faster. Houston Community College in 2018 moved much of its onboarding process online through a system called Choose Your Path. That was a departure from having students come to campus to submit shot records, transcripts and other documents, a 2019 CCA report said.

The digital experience allows aspiring students to pick academic programs, see associated careers and review available wage and job-forecasting data in the Houston area. Prospective students are also encouraged to complete a [career assessment of up to 60 questions](#), which then ranks the careers best matching how students responded. The questions are a mix of specific and broad, such as whether one would like to edit movies, build cabinets, help people with their emotional issues or manage a retail store.

The college's digital overhaul led to an 88 percent "decrease in the number of students without a declared academic plan by the end of their first term," according to the CCA report.

To Elston, that's evidence targeted information provided early in a student's college experience is helpful. "They actually are starting to make decisions that are better aligned with where they want to be," he says.

Through Career Coach, developed by Emsi, prospective students can also search by careers and see degree or certificate routes needed to work in those fields. Some of those searches can be a reality check.

A query for "public administration and governance" has judges as its first career route. Law degrees are needed for judges, although the median salary of \$112,000 could entice some community college students to go the law school route. A career in agribusiness reveals [median earnings of around \\$79,000 as salespersons for](#) "wholesalers or manufacturers where technical or scientific knowledge is required in such areas as biology, engineering, chemistry, and electronics." The information includes the share of workers with various levels of education, from high school to graduate school, in different career fields.

Empowering students with more information about careers and academic majors can address the fact that [more than a third of college graduates ages 30 to 40](#) report regrets about their choice of major in college, according to a Gallup–Strada Education Network survey from 2017. Unsurprisingly, the share of adults who'd change their major increases among respondents who earn less.

Age seems to play a role in satisfaction, a point that numerous scholars make regarding both student satisfaction and the question of whether recent graduates are prepared for the workforce. According to the Gallup–Strada survey, people who finished a four-year college degree after the age of 30 are 10 percentage points less likely to say they should have chosen a different major. The same survey showed that associate and bachelor's degree graduates who wished they had

chosen a different major were 10 percentage points less likely to say they received a good education.

## New Hampshire

The Community College System of New Hampshire, a system of seven colleges with 12 campuses, is part of the Purpose First demonstration project. The system has adopted many of the reforms Complete College America promotes. Those include moving away from stand-alone remedial courses and instead embedding remedial components into college-level work, creating meta majors and course mapping to align with the tenets of guided pathways, and giving students semester-by-semester course scheduling so that they're on a plan that shows them which classes they have to take to earn their certificates or transfer to a four-year institution.

Ensuring students accumulate only the course credit they need is particularly important in New Hampshire, which, according to the College Board, [has the second-highest community college tuition and fees in the country](#), at about \$7,100 a year. Each credit hour is [\\$215 for in-state college students](#). By comparison, California, the cheapest community college system in the U.S., charges \$46 a unit.

As in other states, [New Hampshire's community colleges](#) are motivated by a goal to have 65 percent of state residents holding postsecondary degrees of economic value by 2025. Like others with 2025 goals, New Hampshire is behind. According to the Lumina Foundation, [51 percent of its adults](#) have a postsecondary degree or certificate,

which is higher than the national average of 47 percent. New Hampshire is also undergoing a decline in high school graduates, with a drop of more than 15 percent projected between 2012 and 2032, according to the higher education demographer Nathan Grawe.

Seemingly the only options are to attract older students who haven't earned degrees or to improve the graduation rates of current students.

New Hampshire, unlike most New England states, is virtually on par with the average three-year graduation rate for two-year public colleges. [The national average is 28 percent](#). New Hampshire's is 27 percent, according to federal IPEDS data. That's higher than [the regional average of 20 percent](#) and nearly equal to the region's leader, Maine, which is at 28 percent.

A broader indicator, the National Student Clearinghouse, measures the progress six years later of all students who entered college in a certain year. It shows that the total completion rate—which includes earning associate and eventually bachelor's degrees—for community college students [who started in 2012 was 39 percent](#). New Hampshire's rate was higher, at 41 percent.

The system's three-year graduation rate increased by several percentage points since it underwent Complete College America reforms, said Charles Ansell, the chief operating officer for the Community College System of New Hampshire. Federal data show its three-year graduation rate rose from 21 percent to 27 percent between 2010 and 2018. The share of students passing their gateway math or English courses in their first



year virtually doubled, from 23 percent to 45 percent, since the system reformed its remedial practices so that most students are placed in college-level courses and receive remedial support while still earning college credit—a model known as corequisite courses.

The positive results underscore the power of placing students on the right pathways with clear support, Ansell says. That's a far cry from the typical cafeteria-style course selection for students.

The Purpose First initiative, paired with guided pathways, tries to ensure that students are not only staying on the right academic path but are choosing the one they'll feel motivated to complete. The system relies on two types of software, each addressing distinct buckets. One, Career Coach, allows students to explore careers and the academic programs needed to prepare for them. The other, EAB Navigate, is a web tool that shows students their semester-by-semester academic road maps.

"This isn't supposed to replace advising. It's supposed to enrich the advising conversation by taking away hunting and pecking and transactional stuff," Ansell says. The students and advisers "can have a deeper conversation."

Bridging the divide between academics and careers at the New Hampshire system is an innovative course called Ethnography of Work, which instills in students a career-mindedness using the foundational elements of anthropology fieldwork.

That the road to better understanding of one's career ambitions flows through a humanities course is yet another indication that the liberal

arts still has a few arrows left in its quiver.

Available at a few of the seven colleges comprising the Community College System of New Hampshire, the Ethnography of Work course is an adoption of a similar offering at Guttman Community College in New York City. The course appealed to Aimee E. Huard, a Great Bay Community College professor and social sciences chair there. She created the course for the New Hampshire system, which includes Great Bay, in 2016 to expose students to a rigorous evaluation of whether what they want to do remains appealing after gathering more evidence.

The course was pared down to one semester from two at Guttman, a move to "work with the resources and opportunities of New Hampshire rather than downtown New York City," Huard says. Guttman's revenue per full-time-equivalent student is roughly \$47,000, including, state, local and federal tuition plus other revenue, while Great Bay's is about \$16,000, according to federal data.

The New Hampshire community college course is transferable to the state's public universities, where it can satisfy a general education requirement. Therefore it has more utility for students who want to advance to four-year degrees.

Though the course structure grants its teachers and students flexibility, by its end, students will have had an opportunity to research careers they want and conduct field interviews at a company that represents a pocket of the workforce that interests them. Students are tasked with speaking to employees, writing down observations about the workplace dynamics—such as where the supervisor sits

and whether the workstations are far apart—and reviewing other details related to work-life balance and personal finances. The course's final project is a culmination of the skills in observation, writing and research they've honed throughout the semester. To aid students' inquiries into work, they take the career assessment Career Coach either before the class begins or early in the term.

The course also aims to “uncover myths and stereotypes about” employment while also exposing students to typical social science skills such as verifying the credibility of sources and analyzing text. It's a level of sophistication that's uncommon in introductory courses, says Huard. The course is a requirement for students pursuing liberal arts, psychology, history and computer science degrees at Great Bay. Other majors give students the choice to take the course at Great Bay to satisfy a social science requirement.

Students who take the course are much more likely to continue with their studies. According to data shared with *Inside Higher Ed*, term-to-term and year-to-year retention rates at Great Bay are 30 to 40 percentage points higher for students who took *Ethnography of Work* compared to students in the same majors who did not. For example, retention for liberal arts majors between spring and fall of 2019 was 30 percent, but for liberal arts majors taking the ethnography course, it was 77 percent. At Nashua College, also part of the community college system in New Hampshire, the impact from the course is less dramatic but still notable, with spring to fall retention bumps of 14 percentage points.

About three-quarters of the course's students earn a C or better, Huard says.

She, like virtually every other expert interviewed for this special report, says the numbers make sense because students are emboldened by evidence that their academic requirements and career ambitions are linked.

Students “can start to see how their experiences are going to contribute to their future path and their future goals,” Huard says. “I think there's something very empowering about knowing how all of these steps are going to either build your overall character, your overall skill set and your overall abilities—or very specific skill sets and very specific abilities.”

The course isn't limited to just career exploration. Students can spend time mapping out the courses they need to transfer into four-year institutions and are encouraged to meet with their academic advisers. The theoretical and practical elements of the anthropology course give students ownership of their futures in ways the prescriptive model of high school

“[Students] can start to see how their experiences are going to contribute to their future path and their future goals.”

Aimee E. Huard  
Professor & social sciences chair  
Great Bay Community College

does not. Whereas too much choice can ultimately harm students, this course attempts to give students greater clarity about how their academic pathways can lead to careers they want.

Faculty give Ethnography of Work students a questionnaire that measures the value of the course. Almost all, 85 percent, say the course “reaffirms their paths, helps them find a path or eliminated something that they absolutely don’t want to do anymore,” Huard says. The rest are still unsure.

In addition to the final project, students up their fieldwork skills by reading academic articles and spending an hour at a restaurant observing workers.

Huard says that some classes spend more time training students to become better interviewers, given the importance of speaking to a professional for their final project. Students are taught to ask questions without offending their interviewees. One question she deems verboten during the final project is whether the students’ career subjects earn enough money. “I have told them they can never ask that question because I have yet to meet anyone who actually feels like they make enough money,” she says.

That’s where the observational skills come into play—finding answers to questions that interview subjects may not be able to answer themselves. How has the employee students are interviewing decorated their office, she asks. “Are they Ikea-chic or do they seem to have things that are a little bit more interesting?” What’s the vacation policy and does the employee use vacation days?

The observations can reveal hierarchies that govern the workplace. Students are encouraged to notice who has a corner office and who has a cubicle. An office with a door “can be a very powerful thing,” Huard adds.

Obversely, if the manager works among the cubicle-barn and desk-jockey workers, that can signal to students a less top-down corporate structure, which might appeal to some but not to others.

Because the course’s final project includes a presentation of each student’s findings, the diversity of office dynamics within a field comes through to students. Students can also learn what’s not plausible. Some want to be screenwriters and come to realize when seeking interviews that few such jobs exist in New Hampshire. Others hear about the sacrifices needed to land a dream gig.

Some students learn that their career ambitions need a rethink, Huard says. One student eyeing a career as a veterinary technician passed out while observing a surgery. The student was consoled by veterinarian staff members, who said they all passed out during their first surgery, too. Though the student was left unsure about that career trajectory, adults two decades into their careers had offered some validation. Even if students sour on their initial career interest, “they still have the skills in order to investigate the next thing that is of interest to them,” Huard says.

The classes at Great Bay are popular. Huard ran six sections in the fall, and two were at full capacity of 25 students. She plans to add another section next fall.

Huard doesn't believe all students should take the class. Students certain of their futures who are able to speak with confidence about the skills they bring to employers can skip it. Ansell agrees.

"Let's say I'm going into the automotive technology," Ansell says. "These are not students who have struggled with intentionality or are looking to transfer to the University of New Hampshire."

But every college should offer such a course, Huard believes. Though as an anthropology professor she admits she harbors a bias for more anthropology courses, the class or a similar social science one can give students ownership of their education early in the process. She's critical of campuses where career exploration is limited to a final capstone project in a student's senior year.

"Social science lends itself to looking at these types of questions about what is your agency?" Huard says. "What is your role? What is your purpose in society?"

Given all the reforms underway in New Hampshire's community colleges, Ansell is hard-pressed to say which is most responsible for the system's progress. "If something works, it works. We're not going to hold it back," he says. "We didn't do a whole bunch of controlled experiments."

He's critical of other institutions that want to run controlled pilots of a popular reform to ensure the results are positive. If the research base is strong enough for corequisite courses or giving students access to more advising and clear pathways, there's no need for an institution to "develop their own

correlational data that's spanned out for everyone of their peers."

## Southern Nevada

The College of Southern Nevada is another Complete College America member and has embraced both Purpose First and guided pathways to reform its academics and workforce preparation. The college has several campuses totaling nearly 35,000 students and offers scores of associate degrees and credentials, plus several bachelor's degrees in applied science disciplines like cardiorespiratory sciences and fire management.

James Mccoy, associate vice president of academic affairs, says the college executed a turnaround using a "beautiful blend" of data and grant dollars to improve outcomes. It was motivated in part by the state's funding formula, which bases 20 percent of a public institution's state funding on how well its students perform on key outcomes, including completion of [STEM and allied health degrees](#).

Now in its eighth year of intensive reforms, the college's three-year graduation rate for its non-bachelor's degrees has climbed from around 7 percent for students starting in 2009 to 14 percent for students starting in 2015. That's the federal graduation rate, which excludes most students because it only looks at those enrolled on a first-time, full-time basis.

But the college has other data indicating its progress. The share of first-time students of any course load completing gateway math and English courses rose from 17 percent in

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“We were never on track to begin with. You gave us an application for admission. You gave us a student ID and you said, ‘Go get them, tiger.’”

James Mccoy

Associate vice president of academic affairs

College of Southern Nevada, on how students said the college was falling short

fall 2015 to 22 percent in fall 2018. Between 2015 and 2018, the four-year graduation rate of the college's first-time Pell students increased from 6 percent to 11 percent.

Southern Nevada's story of reinvention began in 2013, when the college launched a pilot project dubbed First Steps for 2,500 students—the enrollment of a typical small private college. The idea was to provide each student advising and career exploration upon admission so that they'd have a better idea of what they wanted to do with their careers and the course pathways needed to achieve those goals before they even picked their majors and enrolled in courses.

The pilot was informed by a round of data analysis. In addition to reviewing leading and lagging indicators like retention rates, completion of gateway courses, number of times students changed majors and time to degree, the college's leadership conducted interviews with students, particularly African Americans, says Mccoy. The point was to learn from

students who didn't drop out where the institution was falling short in its mission as an open-access institution.

Staff asked students why they think others fell off track. The response was “we were never on track to begin with,” Mccoy recalls. “You gave us an application for admission. You gave us a student ID and you said, ‘Go get them, tiger.’”

The interview sessions revealed that students need more than just information about advising and student services; they should be encouraged to actually visit those offices. That takeaway echoes work of Kay McClenney, formerly director of the Center for Community College Student Engagement. She popularized the phrase “students don't do optional.” The College of Southern Nevada's qualitative findings were consistent with what McClenney was seeing from survey data. [Back in 2012](#), the center released findings showing that though 87 percent of colleges reported offering supplemental instruction, 82 percent of students never took advantage of it.

Students in College of Southern Nevada focus groups also said they poorly understood what prerequisite courses were, that the course catalogs were byzantine, that course pathways were inscrutable and that they drop classes without consulting an adviser. The student focus groups affirmed that “what’s happening on the national scene is also happening at home,” Mccoy says.

The First Steps pilot grew to 3,000 students in 2014 and grew again in 2015. Data from the 2014 cohort showed that after three years, Pell students who received mandatory advising graduated at more than double the rate of Pell students who didn’t undergo the advising and career counseling, 10.3 percent to 3.9 percent.

Today, all new, credential-seeking students must participate in a college orientation, meet with an adviser to receive academic advising, take a career assessment, review regional job and wage data, and discuss how their academics align with their career aspirations. The college places a hold on a student’s account; they can’t enroll in courses until they complete this initial flurry of action. Initially, the college’s leadership feared the mandatory advising and orientation sessions would lead to student attrition, but enrollment has stayed relatively flat or increased.

The First Steps concept of mandatory advising check-ins expanded to other stages of the student’s journey in fall 2019. Now students must meet with their advisers once they reach their 15-, 30- and 45-unit milestones and again before they graduate. Each milestone check-in is designed to ensure students are on track, from declaring majors to planning transfers.

The college has been rolling out other reforms.

Guided pathways work was instrumental in presenting students clear career options from the outset of their college tenure. Until a few years ago, the college’s application asked students to select from 180 different majors.

“No idea what the industry employment looks like in our region, what the hot jobs were, what those were paying, what the academic pathway was to get there,” Mccoy said, summarizing students’ first exposure to the college. He thinks it’s one reason students on average changed their majors three times before graduating and acquired 95 units for a 60-unit degree.

Students were exploring courses that often weren’t relevant for the degree and major they ultimately selected. With more than two-thirds of students attending part-time, that meandering ethos was a millstone weighing them down and leading many to drop out.

First the college stopped asking students to declare their major in its application. Then it condensed its 180 majors into [11 meta majors or areas of study](#) so that students could better conceptualize what they wanted to pursue and pick a specific major later. The broad academic categories have names such as health sciences, hospitality and culinary arts, and art and design.

The college borrowed from past winners of community college awards, such as the Aspen Prize winner Indian River College in Florida. Similar to what the College of Southern Nevada now offers, Indian River’s website organizes certificates, associate degrees and bachelor’s degrees that students can

pursue and includes sample sequences of the courses they need to graduate. The academic information is coupled with career data, like typical jobs and common employers, plus average pay. The College of Southern Nevada [describes the majors in terms of the career skills they'll develop](#) and job duties for which they can prepare students. For example, after clicking on the humanities and communication area of study, students first see career titles such as public relations specialist and event planner. Each has a drop-down bar with information about typical job titles and job and wage growth projections as provided by the Bureau of Labor Statistics.

"We certainly stole the best of each of them to fit what we think is a solid model," Mccoy says. The college completed its meta-major model in March 2019. The development of meta majors began in 2017, which followed 2015's completion of academic program maps for all majors and term-by-term course sequencing.

All that information now greets a student before they enroll in a single course. But even this streamlined organization of academic and career trajectories may require some familiarity with the link between jobs and schoolwork. To aid students further, the college used grant money from the Lumina Foundation to [create a six-minute animated video](#) that distills the 11 academic areas of study and careers associated with them. It also provides information on how to get started by accessing the college application site. The college spent \$50,000 on the video and conducted market testing with traditional-age students to make sure it resonated with them, Mccoy says.

Mccoy urges other colleges to expose every student to meta majors at the start of their academic journeys rather than reserving them only for undecided students, something he's seen elsewhere. At Southern Nevada, students may know "they wanted health sciences, perhaps, but they didn't know if it was R.N. or health information technologies or anything in between," Mccoy said.

So that students aren't punished for academic exploration in their first semester with extra credit loads from ultimately useless courses and their added tuition hit, each meta major at the College of Southern Nevada has the same 15 units of classes. The courses vary, meta major to meta major, but within each, the core courses are the same.

"So for example, all of the majors within humanities would all have the same first semester of courses," explains Mccoy. Whether a student ultimately picks journalism, English, creative writing or Spanish, the first 15 units are the same. Faculty and advisers spent nine months developing this curricular feature. Because the college had been working on course-by-course sequencing for several years already, finalizing the core 15 units by meta major became a lighter lift, Mccoy said.

Some majors provide internships while others make them mandatory. When he was chair of the department overseeing communication and journalism, Mccoy helped to implement a three-unit internship that allowed students to choose various facets of journalism, public relations and marketing. That exists today still, and though it's not mandatory, most in the major take one.

Another frequent culprit gumming up students' academic sequences—remedial math and English—was neutralized following the college's embrace of the corequisite model that embeds remedial concepts into college-level gateway courses for students deemed in need of the extra instruction. The whole state must do away with traditional remedial sequences and [adopt the corequisite model by 2021](#), following a rule change by the Nevada System of Higher Education.

Software by the company Hobson's called Degree Planner will soon allow students to track their progress toward a degree or certificate. The college spent 18 months loading the degree pathways into the system so that students will know whether they're on track, how to get back into the right course after failing a class, the added workload and costs associated with changing a major midway, and more. The college in 2020 will release the software as a pilot to several thousand students.

Anchoring this entire career readiness and academic pathways effort is a major investment in academic advisers and counselors. In fall 2018 the college had a student-to-adviser ratio of 1,098 to one. By fall 2019 that had dropped to 652 to one. The goal is to bring it down to 350 to one by 2023. The money for this expansion comes from additional registration fee revenue—which has gone up from \$2,535 in 2014-15 to \$2,963 in 2018-19, according to the college's vice president of finance. ([The actual pricing scheme](#) has various rates for upper- and lower-division courses and includes additional student, technology and recreation fees of \$17.50 per unit. The college also adds fees for students who

have taken more than 150 percent of the units needed to earn their degrees.)

Hiring practices changed to make way for more advisers. Until recently, positions left vacant were usually automatically filled with a new hire. The college now moves most vacancies to a general bucket, where the college can decide which departments need extra staffing. The college's advising ranks have benefited from this more considered review of openings.

Another cost saver that's made way for additional advising is hiring more advisers—positions that typically don't require a master's degree—than counselors, who cost more to employ because graduate degrees are necessary for those positions, Mccoy said. This can be true even though most advisers have graduate degrees anyway.

The college believes it has enough counselors, who work with advisers and counsel students with more severe academic needs. Students with severe academic needs are those who fail classes or are on academic probation, for example. Advisers focus on the general student population and groups that historically need more support, such as first-generation learners, explained Marlon Anderson, director of advising, in an email.

"I hate to say it this way, but it's more affordable for the institution to have more of these sort of generalists, academic advisers," Mccoy says.

With any conversation about higher education reform, be it academics or career readiness, a student's basic needs aren't far behind. Purpose First, guided pathways, removing



stand-alone remedial courses—“do all that, but you’re not going to crack the nut on student success unless you address student basic needs,” Mccoy says.

Complete College America, through the ECMC Foundation, provided the College of Southern Nevada with about \$400,000 in technical assistance to address transportation, childcare, food insecurity and home insecurity. The money also went toward opening food pantries on the college’s campuses.

But Mccoy knows more work needs to be done on basic needs. A campus can run food pantries, “but that’s not getting at the systemic cause—that’s a Band-Aid,” he says. ■

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“You’re not going to crack the nut on student success unless you address student basic needs.”

James Mccoy

Associate vice president of academic affairs  
College of Southern Nevada

## Key takeaways

- Colleges are reacting to perceptions that students are not fully equipped to enter the workforce.
- Some experts want colleges to require students to engage in applied work experience or long-term research projects.
- One strategy is to create a consortium of colleges to advocate for common strategies and learn about best practices.
- The rhetoric of better linking workforce readiness with academics can inspire individual majors to create subject-specific internships.
- Mandatory internships draw criticisms, including that they're unfair to employers. Students self-selecting to become interns might ensure passion for the job. A student forced into an internship may lack enthusiasm.
- Anthropology coursework can promote career exploration. Students can conduct ethnographic research into careers of their choosing, developing academic skills while becoming familiar with the kinds of jobs available.
- Methodology courses can be assigned, requiring students to attend job fairs and submit essays about what they learned.
- Some institutions have overhauled their entire catalogs to show not just major requirements but also clear examples of how majors prepare students for certain jobs. They list workforce competencies students will learn.
- A common theme is emphasizing career exploration early. This helps prevent students from learning late that certain majors aren't the pathways to the careers they expected.
- Some institutions won't let their students register for classes until they've completed a career assessment and have seen an adviser.
- One school of thought is that "students don't do optional." Plan supplemental instruction requirements accordingly.



# Private College and University Efforts

Many private universities are unveiling programs that more deliberately fuse together academics and careers. Others are building on top of long traditions placing undergraduates with employers through co-ops. Liberal arts colleges are pitching their education as essential preparation for the workforce while also adding employer engagement opportunities to strengthen their position among students and parents.

Whatever the route, private colleges have to signal their value proposition, as skepticism over the value of a college degree mounts and debt-weary families cringe at the list price of liberal arts institutions.

“There’s a lot of competition for those students,” says Mick Weltman, executive director of the Associated Colleges of Illinois, whose membership consists of 27 private colleges and universities in the state. “They have to

build upon the things they’re doing well and do it better and make sure that the community that they’re appealing to knows that.”

## Co-ops and combined majors

When Susan Ambrose’s mentor told her to visit Northeastern University nearly a decade ago, while she was still at Carnegie Mellon University, she felt duty bound by their friendship to check it out. Given her research career studying how people learn, with a particular interest in communicating proven ideas to professors who can use those tools with their students, Ambrose’s mentor thought Northeastern had something to show her.

Though she was initially lukewarm, her doubts quickly faded. Ambrose, who today is the

senior vice provost for educational innovation at Northeastern, learned something about the university that few seem to know, even though it's been a staple of the institution for about a century: its co-op program.

Today, around 97 percent of all students at Northeastern, a private research university in Boston that in the past decade and a half has quickly climbed the ranks of *U.S. News & World Report*, take six months off to work full-time for an employer related to their course of study. More than three-quarters do it twice, and 35 percent a third time.

As colleges confront a reputation of poorly preparing students for the workforce, Northeastern offers a case study for how a place of higher learning can honor both its commitment to impart students with the lessons of lifelong learning and prepare them for their first job, plus many after that.

"The co-op model, if instantiated the right way, is really a very strong learning model," says Ambrose, who is a longtime researcher of how students learn and who cowrote the 2010 book *How Learning Works: Seven Research-Based Principles for Smart Teaching*.

The co-op model is one reason 93 percent of Northeastern's graduates are employed full-time or enrolled in graduate school within nine months of graduation, based on a 10-year average, according to published institutional data. The university also says 90 percent of 2018 graduates are employed doing work related to their major.

"Some of the most powerful drivers of work readiness for college graduates are things that we've had for a hundred years," Kaplan's

Busted says of co-ops.

The science of learning helps to unpack why fusing work with a career helps to not only give students a leg up in the workforce, but also to become better masters of their study areas. As Ambrose tells it, "One of the most difficult intellectual skills that human beings engage in is the skill of transfer, which means learning something in one context and then transferring it to another context."

The examples in higher education where this difficulty is on display are rife. A physics student who may excel in their physics courses enters engineering courses lost because the link between theory and how it's applied in the real world isn't reinforced.

Other concepts that the public may take for granted in theory aren't readily apparent to many students. College students do know that 15 multiplied by two is 30, and they know that sum multiplied by four is 120. But such standard arithmetic goes by the wayside when students are tasked with assembling their academic plans to graduate on time, which requires 15 units a semester for four years. ([A 2018 California law actually](#) ordered higher education institutions to remind students that finishing in four years requires 30 units a year.)

The problem with modern higher education is that "you don't get the opportunity to actually transfer what you've learned to a new context," Ambrose says. "So now I get out, I've graduated, and the expectation is I will remember all of the knowledge and skills I learned in four years, and I will know when to access it and when to use it and how to use it. I mean, think about that."

Exams and homework move the needle a little, but those have their faults, as well, because the feedback isn't immediate in the way a work-based experience is. Consider piano instruction, where the instructor is sitting beside the student and noting when the wrong note is played or the position of a finger needs to be changed, Ambrose says. The instruction and guidance are instant, unlike an essay or other assignment that takes days or weeks to grade.

"We've had it wrong in education for a long time," Ambrose says.

Most of Northeastern's 14,000 undergraduate students begin their first co-op during their fourth semester, as sophomores. "They're taking the coursework with the knowledge and the motivation that says, 'I'm learning all this stuff, and I'm going to be using a lot of it on co-op,'" Ambrose says. The transference of knowledge is baked into how students learn.

Students in the co-ops work full-time and make up their coursework either online or in the summers, Ambrose says. They're also typically paid the starting wages for an entry-level position in the field they're pursuing. Northeastern relies on a list of more than 3,000 employers, with many putting in orders for student employees through the co-op program. Between 2006-07 and 2018-19, the number of co-op placements nearly doubled to about 12,000 from 6,301.

"It's not unusual that we have a company that's hired, you know, 30 students every six months," Ambrose says. And as the number of employers interested in recruiting student workers has increased, longtime partners have begun to complain that it's harder to

find the same number of co-op employees as they had before. "It's a good problem to have," Ambrose says.

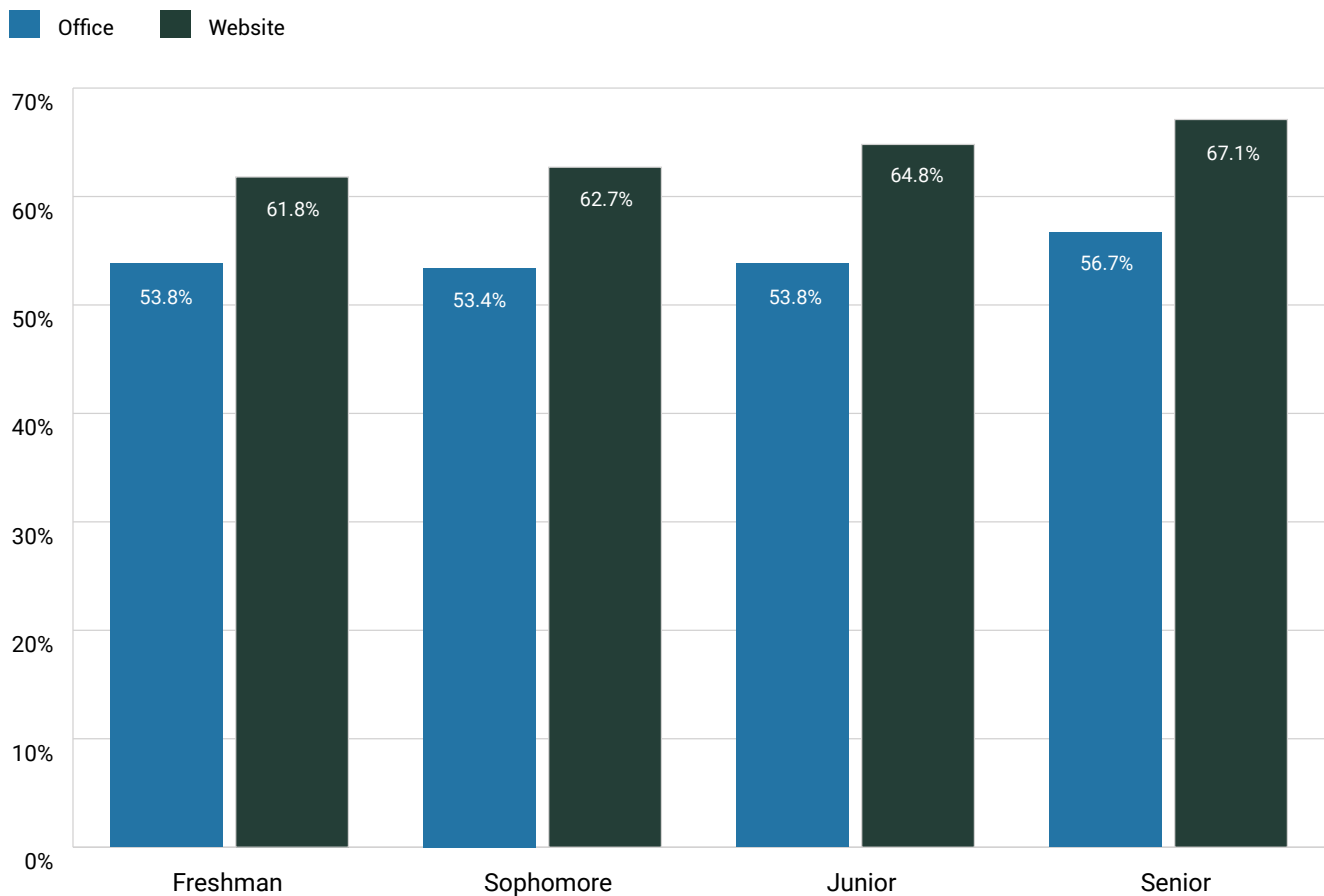
Northeastern officials say co-op employers include Spotify, Amazon, Google, NASA, Facebook, federal government agencies, non-government organizations, not-for-profits, Goldman Sachs, the Palmer Research Station in Antarctica and Silicon Valley start-ups, among many others. The jobs are varied, from mechanical and computer engineers at firms such as Facebook, Raytheon and General Electric to editorial and publishing assistants at *The Washington Post* and BookBub. Co-op experiences take students to the Somos Art Gallery in Berlin as gallery assistants, to Armenia as human rights assistants and to London and Sydney for roles in finance and economic analysis. [One student working at Republic Records](#) had to keep secret the fact that a beloved musical group, the Jonas Brothers, was reuniting. During a transition period at the company, the student assumed a role as the band's executive assistant until a replacement could be found.

Students have to apply to co-op positions and experience rejections, an initial shock to their confidence that undoubtedly toughens their skin when they enter the job market after

"We've had it wrong  
in education for a  
long time."

Susan Ambrose  
Senior vice provost for educational innovation  
Northeastern University

## Career Center Usage: Percent of Students Visiting at Least Once



Source: NACE 2018 Student Survey

college. "Sometimes the employers don't get the students they want, and sometimes students don't get the employers they want," Ambrose said. Students are encouraged to apply to several openings, just as they would in a traditional job market. By their second and third co-op stints, students are more certain about the openings they want to pursue, Ambrose adds.

For all its benefits, Northeastern's co-op program "takes a huge infrastructure," Ambrose says, something that may scare off institutions aiming to replicate it. Given the ubiquity of the co-ops, colleges would need to handle

the logistics of offering thousands of returning students housing and adequate sections for required courses, among other considerations. The operation is huge, requiring some 120 co-op advisers who are separate from the academic advisers students typically rely on to navigate their academic and career plans. The university also employs more than a dozen employer-engagement staff to bring more companies into the co-op fold. Part of the model's popularity is due to student self-selection, as well. Incoming students cite the work-experience model as the top reason they enrolled, Ambrose says.

"It would take a lot of restructuring, a lot of resources. So I never want to say everybody should be doing it," Ambrose says. Nor does Northeastern make money off of the co-ops. The institution views co-ops as an extension of its academic model, Ambrose adds.

Northeastern's embrace of a career-informed curriculum doesn't stop with opportunities to learn on the job. In the past few years, buoyed by feedback from students returning from co-ops and the employers who host them, the university began rolling out combined majors that entwine different disciplines as one bachelor's degree. In addition to more conventional pairings like English and philosophy, the university offers biology and English, environmental studies and economics, computer science and journalism, data science and psychology, and scores of other [combinations totaling 195—up from 142 in 2018](#). Their popularity is evident—in fall 2019, more than 20 percent of the incoming class declared one of these combined majors.

The combined majors are a recognition that as the workforce is becoming more dynamic and interdisciplinary, colleges should respond in kind.

"Students come back from co-op, and they say, 'This is what I need. I don't have this,'" says Ken Henderson, Northeastern's chancellor.

But Henderson doesn't support a model that some higher education watchers have endorsed: to have every student take a data analysis or visualization course. He doesn't support the model even though these skills are in demand among employers. [According to a 2017 analysis of job openings by Burning Glass](#), 58 percent of openings outside of

technical job clusters want candidates who can analyze data, and 29 percent seek candidates who can manage data.

"Forcing students to do things because we think they're right, that wouldn't really fit with the Northeastern way," Henderson says. He views a mandatory data analysis or visualization course as restrictive. The combined majors, which better integrate the tools of a discipline into academics, are the preferred approach to exposing students to those hard skills, Henderson says.

In majors long tarnished with the stigma of obsolescence—the humanities and social sciences—58 percent of students enrolled at Northeastern do so through the combined major offerings. Students who love literature or history can recognize they need "real-world skills, and therefore they can actually get the

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“Forcing students to do things because we think they're right, that wouldn't really fit with the Northeastern way.”

Ken Henderson  
Chancellor  
Northeastern University

best of both worlds by the combined majors," Henderson said.

A combined major in English and graphic and information design has students taking interdisciplinary courses such as Information Design, in which students use design software and stack skills based on previous design courses. Ann McDonald, a professor of art and design at Northeastern, said in an email that students in the course "connect theory and information design principles through research, audience definition, concept development" and then communicate those ideas with an appropriate visual language. Examples of projects include magazine-style data visuals of climate change and illustrated tutorials on how to prepare fruit jam using as few words as possible.

The combined major in English and graphic and information design is new, so few students have earned degrees in it. [One graduate worked on a faculty- and student-led project](#) that sought to decipher a 15th-century German manuscript believed to be used by convent nuns that until recently sat neglected in the school library. The project, whose details were on display as a mural at the campus library, attempts to translate the abbreviations written in German and Latin and reveal more about this mysterious tome of more than 600 pages. Students from a range of disciplines worked on the project, including those who analyzed the chemistry of the book's pages and the music for the written chants. The English and graphic design major developed branding and logos for the project that referenced the medieval book's pages made from animal skin and etchings within the manuscript.

"It is very interesting to see students who pursue combined degrees investigate both areas of their degree through classes and co-op experiences and have opportunities to develop their multiple interests and pursue integrative experiences," McDonald says. Several other majors pair with the graphic and information design major, including math. The university describes the combined major as a way to integrate "text and image to visualize concepts and data to enhance human understanding of complex and vital knowledge."

## Why interdisciplinary education?

Underpinning Northeastern's numerous efforts of interdisciplinary education and the combining of work and academics is a theory dubbed "humanics." The term, used by Northeastern president Joseph Aoun and expounded in great detail in his 2017 book *Robot-Proof: Higher Education in the Age of Artificial Intelligence*, is meant to convey a new standard of education as automation consumes a greater portion of work. To respond to this seismic shift, Aoun writes that higher education "needs a dramatic realignment" and has "yet to adapt" to the major changes in the global economy.

He worries about a future in which large companies don't supply the same number of jobs that massive firms did a generation ago, noting that while General Motors in its heyday employed around 600,000 workers, Google employs roughly a tenth of that. He remains hopeful, however, about the relationship between work and employment. Society has so much to discover and examine, from the



deep canyons beneath the sea to advances in addressing climate change. The creation of music, art and literature awaits. Machines will replace rote work, but not creativity.

Higher education must "rebalance their curricula," Aoun said, in response to this new economic normal by stressing technological and data literacy as well as design, communication and the humanities. Additionally, colleges must impart new cognitive capacities or mind-sets: drawing connections between the various aspects within a system, entrepreneurship, cultural agility and the work-horse of the traditional liberal arts education, critical thinking, which he defines as the habit of rational analysis and judgment.

Learning all these can't be done in the classroom alone. Integrating work and academics is necessary to develop the hard and soft skills to keep workers robot-proof, Aoun argues.

A residential university, with its legion of co-curricular activities, is uniquely positioned to introduce to students the habits of mind beyond the classroom that are needed for the new economy, he writes. Aoun also defends the liberal arts, writing that just as engineering students learn about the full system behind a structure, such as its materials, physics and environment, "the study of human culture and behavior is just as complex."

The difference between the hard sciences and the liberal arts, Aoun writes, is that the former has a direct application in the workforce, while the liberal arts is perceived as abstract. To combat this, the liberal arts too needs "an experiential component" that fuses academics with the workplace and volunteering efforts.

Experiential learning, such as a co-op, allows students to learn the digital competencies employers use while also applying their traditional liberal arts skills on the job.

Aoun goes further. The rise of sophisticated machines means practical majors are not the key to a good-paying career. Those roles will likely be replaced by automation, Aoun writes. "Instead, the jobs of the future will demand the higher-order cognitive abilities and skills that are often associated with a liberal arts education, and that are pointedly inculcated through an education in humanics."

There are glimmers that employers agree with Aoun. An IBM report [from fall 2019](#) estimated that 120 million workers in the world's 12 largest economies will need to be retrained because of artificial intelligence, but that most of that training will be in the skills liberal arts education already provides. That's a change from a few years ago, when STEM skills were the most sought after. Another significant change is the time needed to get current workers up to speed. Training a worker in 2014 took a median three days. Now, it's 36 days.

"Some of the skills required today take longer to learn because they are behavioral, such as teamwork, communication, creativity, and empathy," the IBM report says. One recommendation, ironically, is for employers to rely on artificial intelligence to assess their workers' current skills gaps and provide them with the soft skills training they need to be more productive.

Other scholarly analysis is even more sanguine about the labor force's adaptability in the age of artificial intelligence. "Machines cannot do the full range of tasks that humans can do,"

wrote Erik Brynjolfsson, an MIT business professor, and Tom Mitchell, a computer science professor at Carnegie Mellon University, [in the journal Science in 2017](#). Machine learning will create new products, services and processes. Some positions will go; others will grow. The authors came up with a 21-question rubric to measure whether a task is suitable for machine learning.

Indeed, AI can replace an attorney's task of finding relevant case law for a trial, but it won't be able to interview witnesses or arrive at a legal strategy to win the case. Machine learning tools can scan medical images to find abnormalities, but conferring with other doctors or comforting patients is outside the ability of machines—for now, at least, Brynjolfsson and Mitchell wrote. But not all forms of human interaction are safe from automation. Rote discourse or common customer queries are things robots can handle. A chat bot can be trained to make a sale by being fed online chats with potential buyers. The more systematic the task, the more likely it is to be automated.

Where humans will differentiate themselves is in defining clear goals for machines to solve. That suggests an “increased role for scientists, entrepreneurs, and those making a contribution by asking the right questions,” they write.

Taking a step back, an academic background that can appreciate how societal and technological dynamics interact—a systems approach to human problems—seems like a reliable framework to prepare for this future with AI. In this regard, perhaps the liberal arts, paired with real-world work, has a longer shelf life indeed.

## Career advisers starting on day one

Colby College in Maine is another campus that's exposing students to career mindfulness early in their academic tenures while also promising internships, study abroad and research experiences to anyone who wants it.

Organizing the set of academic and enrichment experiences for this college of 2,100 students is DavisConnects, [named after a funder](#), a new clearinghouse of advising and financial aid that launched in 2017.

“We believe that every student should have research and an internship and a global experience,” says C. Andrew McGadney, vice president and dean of student advancement at Colby.

DavisConnects got its start through a \$25 million grant. The money was earmarked to underwrite short-term experiences abroad for students with financial need. The college then built its entire set of career and extra-curricular experiences around that fund, bringing in other grants so that students have a one-stop shop for their career, research and certain study abroad ambitions.

“The initiative is really about ensuring that every student has the ability to have all of those experiences regardless of their ability to pay, regardless of their personal and/or professional networks,” McGadney says. The Class of 2018 was the first to graduate after the launch of DavisConnects, and 92 percent of the class completed an internship or a global experience and/or participated in research. In fact, nearly 50 percent had three or more experiences.

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“The initiative is really about ensuring that every student has the ability to have all of those experiences regardless of their ability to pay, regardless of their personal and/or professional networks.”

C. Andrew McGadney

Vice president & dean of student advancement  
Colby College

A core component of DavisConnects is its career advising team. In addition to faculty advisers and class deans, students on their first day are paired with a career adviser who specializes in a segment of the workforce. There are seven in total: STEM; arts and communications; finance; law, government and policy; education and social impact; health; consulting and entrepreneurship; and the eighth adviser assists students in securing financial aid to fund their experiences through the college's numerous extracurricular opportunities.

Roughly 93 percent of the entire student body interacted with DavisConnects last year. Interaction was defined broadly to include activities like seeing a career adviser, logging on to the personalized job portal Handshake, attending industry expos that feature six to 10 companies in a particular field and job-site visits. Research grants, internships and short-term studies abroad count, too.

Other college students engage with their career offices, either in person or online, at lower rates than do Colby students. According to NACE survey data and depending on the class, just over half of students visit the career center, and around two-thirds visit the website.

Industry expos were created in response to diminishing student attendance at traditional on-campus employer recruiting events, says Lisa A. Noble, director of employer engagement and entrepreneurship at Colby, whose past career was conducting marketing and brand management for major corporations. She's also one of the seven DavisConnects career advisers, guiding students interested in consulting work. Now, the companies “essentially pitch themselves to students,” she says. The expos include breakout sessions where representatives from the firms give students industry insights and often teach hard skills, rather than just talking about the companies they represent.

The experience for firms is just as valuable. “If I’m a company and I want to be able to attract a steady stream of really great employees, I probably need to build my brand on campus and get top students aware of me as a destination,” Noble says.

To her, the skills gap narrative is almost moot. It can be “easily, quickly, efficiently closed,” she says. “I think unimaginative employers make that [skills gap] a barrier to access certain kinds of opportunities.”

The DavisConnects advisers can tag team with faculty advisers and class deans to both steer students toward matches between their career and academic interests and to underscore for students that a liberal arts education has market value.

McGadney gave the example of a student telling their class dean that they’re considering a transfer to a bigger institution such as Columbia University because it has a larger finance and business program. “That’s usually when we realize that a student hasn’t yet understood the power of a liberal arts experience,” McGadney says. At that point, the student is paired with the DavisConnects career adviser specializing in finance careers—in this case a former associate director of career development at the Yale School of Management—to devise an extracurricular plan. That could mean an internship or being introduced to Colby’s mentoring program of alumni and other professionals, which students can also access through an online portal.

“All of a sudden, it doesn’t necessarily matter whether you’re at a hard-core business school or you’re sitting here getting a really rich liberal arts education,” McGadney says. That the

college begins these conversations with students in their first year, rather than their junior or senior year, is another way Colby differentiates itself from other colleges.

Colby has a whole month in [January put aside for student research](#), experiential learning and [off-campus study](#) opportunities, called Jan Plan. Students must complete three; 90 percent do four. Some of the Jan Plan classes are immersive experiences that give students access to software or instruction that can follow them in their careers, like shooting and editing films or a class on legal writing and argument taught by a Colby alum who’s a practicing attorney. Some are more whimsical, like the art of fly fishing, which combines analysis of literary text about the outdoors, reflective essays, a fishing blog that promotes environmental awareness and actual fly fishing near Mammoth Lakes in California.

Noble has bigger plans for Jan Plan. For a graduate school project that’s gotten the green light from her Colby supervisor, she’d like to create what she calls a Jan Plan institute that would develop students’ hard skills, which many office jobs value. She envisions a “prescribed core curriculum” that will teach, for example, Google Analytics, advanced Microsoft Excel skills or PowerPoint. Noble also foresees “more bespoke” skills such as real estate software, financial modeling or other skills tailored for specific careers. Plugging the instruction into Jan Plan affords the college the chance to complement a traditional liberal arts curriculum “with topics that are more applied and industry-focused,” she says.

A pilot for her idea is set for the Jan Plan of 2021.

For their résumés and cover letters, Noble also helps students translate their numerous Colby experiences into the language employers speak. Given her long tenure in the business world and time at Colby, she knows that students have much to boast about but often are too modest to connect their campus experiences to the qualifications that employers say they require. She talks to students about their “superpowers, what are the five or six traits that any entry-level employer’s going to be looking for,” she explains. What she lists matches the skills NACE says employers want, such as communication, creative problem solving and collaborative work.

She teaches students how to turn their work and academic experiences into a story with noted accomplishments able to resonate with hiring managers looking for tangible outcomes.

“I’m happy to turn a story about scooping ice cream cones into a story about putting a smile on everyone’s face or how, if you’re especially efficient, [you’re] moving the long line of ice cream seekers through,” Noble says. “Even if they’ve never had a formal internship of any kind.”

Some Colby students have gotten work experience through creative employer engagements sponsored by the college. In one multi-month endeavor, about two dozen students analyzed retail sales data for a regional company, Gifford’s Famous Ice Cream, and conducted custom survey research nationally. Their findings were used by Gifford’s to improve its standing among New England ice cream shoppers and explore new markets for future expansion, [a Colby Magazine article said](#). The students represented various

majors that were ideal for specific elements of the project, from computer science and economics to English and philosophy. They analyzed market data, conducted field interviews of ice cream shoppers and ran surveys. Along the way, students learned how to use advanced statistical software, interview strangers for qualitative data about customer purchasing habits and present recommendations to the leadership team of a familiar brand in the New England area. The students worked in tranches—some did one phase of the project and others another. Noble led the project, leaning on her many years of experience in quantitative insights for major brands.

Though the work gave students bankable experience and increased confidence, the scalability of the effort is limited. “I don’t think I could do a year wraparound project again,” says Noble. “It was a good experiment for me to see if we can kind of do something in real life.” Students now pitch smaller consulting projects to nearby businesses, writing business plans and pitching ideas to research a part of their operations that can ultimately yield insights to improve their bottom line. The students aren’t paid, but the experience is valuable.

## Outside help

Colby, like scores of other colleges, also partners with a firm called Parker Dewey that matches students with employers offering micro-internships that pay.

Unlike semester-long hiring stints that require considerable investment and planning from employers, Parker Dewey lowers the stakes for both students and managers by creating

a clearinghouse of shorter-term projects that still give students work experience and a burgeoning relationship with an employer that can eventually offer future full-time work.

Jeffrey Moss, founder and CEO of Parker Dewey, won't reveal how many students receive micro-internships through the firm, but he says that 96 percent of students who have had such an experience and graduated in 2018 are in full-time jobs that do require a college degree.

Noble of Colby says 68 students at the college have a Parker Dewey account, and 18 projects had been completed by November 2019.

Since 2016, Parker Dewey had prided itself on working with less selective institutions so that their students get an in with prestigious employers. "The reason we're able to impact college to career is that from a campus recruiter's perspective, this provides a better signal as to the right hire as compared to GPA or academic pedigree," Moss said. "It provides a way to look beyond just the handful of students who come from certain schools or certain majors or certain GPA and build early relationships with them."

Students have to apply for the openings, but most are remote, meaning students eyeing gigs for firms located hundreds of miles away aren't at a disadvantage, Moss says. An example of a job can be a competitive analysis of pricing in the flavored water space for consulting powerhouse McKinsey. Another could be creating case studies for a consulting firm's three clients or assessing the efficacy of a company's job posting by analyzing postings for similar positions at other companies. [Parker Dewey's website has sample postings](#)

and the pay rates students receive, which range from \$150 to \$800.

The emphasis on experiential learning is apparent in the company's name. Francis Parker and John Dewey were both highly influential scholars on education and championed learning by doing in pedagogy.

"I love Jeffrey Moss," Noble says. "He built the business I would have wanted to that is exactly what I think needs to be in the world." The Parker Dewey program is scalable, easy to manage and gives students work experience—a leaner version of the ice cream project she led.

Parker Dewey doesn't charge institutions or students a headhunting fee; rather, it assigns a 10 percent surcharge to companies that hire students for short-term work through its platform. That approach helps to swat away the skepticism a third-party provider will draw when it promises to connect students to careers in a higher education setting. The business model is informed by both Moss's background, which includes working in the education space as chief of product growth for testing company ETS, and his time in finance.

Moss is concerned about companies entering this job-connection space and charging campuses or extracting a share of a student's future earnings. "We're obviously worried that other companies will enter the space and... create these disincentives and potentially just screw up the market," Moss says.

But he also recognizes employers don't have time to review a student's online portfolio that provides an in-depth look at their academic

and work experiences, at least not at first. A line on the résumé that highlights a paid gig with a recognizable employer, on the other hand, can impress hiring managers. One that pays students, rather than having them provide free labor, is attractive to future workers eyeing their next move after graduation.

## Mandatory research or work experience

Hendrix College, a private liberal arts institution with 1,200 students in central Arkansas, is the rare campus that mandates that its students participate in research, public service or work-related experiences.

Since 2005, students at the United Methodist Church–affiliated campus have had to complete at least three Odyssey experiences, which are organized into six categories and each demand of students dozens of hours.

Combined with more recent career-focused reforms, the college is combatting the tired stereotype of a liberal arts education preparing students for jobs that aren't deserving of college degrees, says Leigh Lassiter-Counts, director of career services at Hendrix.

The extensive efforts also serve as the college's value proposition to parents and students eyeing cheaper state institutions. "You're going to learn all these things in a different way than you might get it at a large state school, where you're in a classroom with 350 people and you never see a tenured professor until your senior year," Lassiter-Counts says.

In 2019, at least 44 percent of the graduating class of 306 students completed an internship, a potential undercount as some students may not have notified the college of their plans. Another 23 percent completed an undergraduate research project, and 56 percent completed either. Internship opportunities occur locally, in major U.S. cities farther away and abroad. They are at U.S. embassies, network and public news outlets, state government, nonprofits like the Make-a-Wish Foundation, the legal counsel for the indigent, and groups focused on LGBTQ issues, among others.

Two majors require internships: environmental studies and health sciences.

For research and service-related Odyssey experiences, [students can apply for scholarships](#) to fund their journeys.

One student designed a research project that took them to London to conduct research with writers of exile, migrant and refugee backgrounds. "I wanted to know how migrants tell stories about themselves, and what it means for them to share creative prose and poems" is how the student described their ambitions, according to examples of projects the college shared with *Inside Higher Ed*. Another student attended the 2019 American Baseball Coaches Association convention to examine how the science of physics plays into the sport.

"We didn't want students to go through this great four-year education at Hendrix and then go back home to their parents' basement," Lassiter-Counts says. "Odyssey was a way to give students real-world experiences and skills."

More recently, the college introduced a three-day Career Term for sophomores that it has piloted for some but is making mandatory for all second-year students this year. Students in the last days of their winter break in January beef up their workplace soft skills, which run the gamut from working on handshakes and how to dress appropriately to using workforcespeak to communicate to employers that they're ready for a career. Tips on work-life balance and discussions about diversity and equity in the workplace are also on deck. The college invites alumni who create break-out sessions on specific topics, such as workplace politics and entrepreneurship.

"I have a feeling in 30 years we're going to look back and laugh at the boom in cybersecurity," said William M. Tsutsui, the president of Hendrix College, in a [2018 interview with \*Inside Higher Ed\*](#). He added then that skills such as interviewing for jobs won't go away—they're evergreen.

Rather than pushing students into applied careers, the Career Term is intended to underscore that liberal arts students are receiving an education preparing them for the world of work. Mindful of how liberal arts colleges are perceived publicly, Hendrix published [a sleek Q&A](#) explaining the rationale behind Career Term.

Hendrix has joined other colleges and universities in skills mapping their academic programs so that prospective students can read how each major imparts job-readiness tenets. This spring the college will update its course catalog to reflect the work of faculty who connected what they teach to NACE's workplace competencies.

Feeding the alignment between academics and workforce competencies is a convening all faculty and most administrators held last summer, in which each department wrote how the subjects their students learn translate into the NACE competencies that employers seek. The exercise was inspired by a NACE event Lassiter-Counts and Hendrix's vice provost of faculty development attended the year prior. That triggered an effort to show students and the public how "career competencies can transform the way we frame a student's education at Hendrix," according to an email to faculty shared with *Inside Higher Ed*.

For critical thinking and problem solving for the art department, faculty wrote, "Sometimes art materials produce unexpected results or even fail altogether. Diagnosing and solving these technical issues is basic artistic critical thinking." The language is instructive—it functions as a rhetorical crutch for students interviewing for jobs and answering the typical questions recruiters pose, such as describing a setback and how the candidate overcame it. Another line reads that "students evaluate their own artwork through written and oral self-criticism."

The physics department also cited self-reflection as a skill taught to reinforce critical thinking and problem solving. The department's faculty noted that "students respond to what they observe" by making predictions, designing ways to test those predictions with an experiment or computer model, and then refining their understanding.

The department flagged its use of data visualization instruction as a communications competency. It wrote that "Students in our lab-based classes learn to make graphical



representations of their data.”

The English faculty explained that their courses teach students communication skills “through listening to each other’s ideas, analyses, claims, concerns, questions, in class and beyond,” as an example a student applying for a job could use when asked how they’ve learned from others to complete a task. The theme of responding to failure or setbacks is consistent throughout these descriptions. The English faculty write that their students “learn that writing itself is a process, one that requires revision and redirection.”

Work-study students and their supervisors underwent a similar exercise in September 2019 to better communicate how on-campus jobs prepare graduates for careers.

Lassiter-Counts describes the competency alignment project as a way to finally equip the college with a “shared vocabulary” that signals to employers that students are being taught the skills they value most. “We were just not good at talking about it,” she said.

Until now.

## Differentiating from competitors with career readiness

Furman University [went all in on experiential learning in 2016](#). The South Carolina campus of nearly 2,800 undergraduate students formally changed its mission statement to stress that its liberal arts education will provide “real-world” experiences to its students.

The impetus for the overhaul was a sharply worded 2015 report Furman commissioned

from market research firm Art & Science Group. It said the university’s value to prospective students was unknown.

“Furman suffers from a significant lack of differentiation and overall appeal in the market with no clear identity or distinctive appeal,” said Elizabeth Davis, the university’s president, in a 2018 webcast in which she described what the report said.

“Can you imagine what it was like when we received that news?” she continued. “What we knew we needed to do was to come up with a bold plan, not just a tweak here and there, and that’s where this vision emerged.”

That vision is Furman Advantage, a four-year pathway that promises students job experiences, opportunities for original research, meaningful relationships with faculty and strong mentorship.

Furman’s promise to all its students, not just a subset, is “the real revolution,” Busted of Kaplan says. ([Busted interviewed Davis during](#) the 2018 webcast, when he was still with Gallup.) The promise isn’t a mandate, though. Furman doesn’t require students to participate in one of its many engaged learning opportunities to graduate, though some majors require thesis or capstone projects.

The Furman Advantage’s promise to students is a nod to career mindfulness and the richness of life that traditional liberal arts educations have promised students for decades: it “prepares students for lives of purpose and accelerated career and community impact—demonstrating in concrete terms the value of a Furman education.”

With the Furman Advantage fully in place

since 2017, about 83 percent of the Class of 2019 studied abroad, worked at an internship or pursued undergraduate research, according to data tracked by Furman’s center for engaged learning. “We would consider success to be either getting 100 percent participation in either internship, undergraduate research or study away,” says Beth Pontari, associate provost for engaged learning. Exit survey data show that the Class of 2019 came close—92 percent. The discrepancy might come from work experience that the university didn’t consider long or immersive enough or that was done independent of the institution’s role.

The university has developed internal tracking measures to know just how engaged its students are. The level of detail allows the institution to know “if the student has had a credit-bearing internship or a summer internship that was paid,” Pontari says.

A [\\$47 million gift from the Duke Endowment](#) is helping to underwrite much of the hiring and other expenses associated with the Furman Advantage. ([Furman is one of four](#) higher education institutions in the Carolinas that receive support from the Duke Endowment; the others are Davidson College, Duke University and Johnson C. Smith University.) Though that money is essential to Furman’s turnaround, leaders will be analyzing which reforms can be done with minimal cost that other institutions on a budget can replicate, says Ken Peterson, vice president for academic affairs and provost at the university. Still, the money went toward numerous new positions, such as an associate dean of advising and mentoring, an associate dean for faculty development, and coordinator positions, among other hires.

## Furman Advantage Participation

Type of Engaged Learning Experience	Class of 2018	Class of 2019
Research	29%	32%
Study Away	51%	54%
Internship	52%	52%
<b>At least one experience:</b>	<b>82%</b>	<b>83%</b>

Source: Furman University

Asked whether the university would be able to make these hires without the endowment, Peterson says, “Probably a few, but not much.”

The idea to pursue these reforms was also informed by Gallup survey data showing that college graduates value their institutions if they had meaningful experiences with faculty and opportunities for lengthy research, work and engaging extracurricular activities. Those three experiences are part of the six broader ones that Gallup research says lead graduates to believe their time in college was valuable; the other three experiences are related to student support, such as mentoring and having caring professors. The “consistency and quality of experiential and deep learning activities was questionable,” said Davis, Furman’s president, in the 2018 webcast, in which she described aspects of the Gallup experiences that had been missing at Furman. The Furman Advantage “gave us a great opportunity to align our educational experience with outcomes that matter,” she said.

When the Furman Advantage was in its planning stages, few colleges had been seriously

## The Undergraduate Experience: Support and Experiential Learning

Support	% Strongly Agree
I had at least one professor at [College] who made me excited about learning	63%
My professors at [College] cared about me as a person	27%
I had a mentor who encouraged me to pursue my goals and dreams	22%
Strongly agree with all three support statements	14%

Experiential	% Strongly Agree
I worked on a project that took a semester or more to complete	32%
I had an internship or job that allowed me to apply what I was learning in the classroom	29%
I was extremely active in extracurricular activities and organizations while I attended [College]	20%
Strongly agree with all three experiential statements	6%

Strongly agree with all six statements	3%
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Source: Gallup

Gallup-Purdue Index (Feb. 4 - March 7, 2014)

offering those experiences to their students. In a 2014 national Gallup survey, [just 6 percent of respondents](#) strongly agreed that they attended a college that offered them all three experiences. No category received more than 32 percent of respondents who strongly agreed.

Furman [is now tracking how it performs on all six experiences](#)—three experiential and three support—by partnering with Gallup, paid for by [a portion of the Duke Endowment](#).

The Furman Advantage is organized around a linear pathway that introduces students

gradually to the ideas of careers and how their learning prepares them for work. Virtually all of the experiences are covered by the normal tuition students pay, with few exceptions, says Peterson. Experiences include housing and travel costs [for certain summer experiences](#)—though scholarships for students with financial need are available. The standard study abroad trip is included with tuition; even the airfare for those is included, Pontari says.

The first two years include an advising course, a daylong job-shadowing opportunity with willing alumni and the option of service-oriented

trips [during spring breaks](#) that cost an extra \$100, Peterson says.

The final two years revolve around more direct employer engagement and organized reflections on how what students learned in class translates into career competencies.

The university's website hews closely to the structure of gradual self-discovery. On the advising page, students read how each academic year reinforces a set of competencies that are vital for both academics and the workforce. They also see activities that they should pursue and when, such as plotting internship or research opportunities in the fall of sophomore year or [attending career networking events in the fall of junior year](#).

"We want this notion of the engaged learning and career preparation to happen at developmentally appropriate times," Davis said. By example, she said that "freshmen aren't ready to talk about career preparation... And in fact, first-year students and maybe even second-year students aren't quite ready to contribute meaningfully in an internship where they can apply what they've learned."

The university has been expanding a two-year advising course for entering freshmen that places them in classes capped at 15 students each. Each cohort, of which there are about a dozen, has a dedicated academic adviser they meet with weekly in the first year. Students learn about the career competencies employers value and begin plotting the experiences at Furman they'll want.

With an eye toward proof points, the university has been studying these students and comparing them to a control group of students

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Elizabeth Davis

President

Furman University

who weren't randomly selected for the advising course. Pontari says self-assessment data indicate students in the advising course rate themselves as having better communication skills and being better able to bounce back from failure.

The Furman Advantage, though still relatively new, is already encouraging more students to pursue the meaningful experiences that are at the heart of the university's redesign. Between the summer of 2018 and the summer of 2019, the percentage of students applying for summer internship fellowships grew by 40 percent, says Pontari. The growth in students committing to research projects also grew by about 20 percent, she adds.

So that students can better make use of the institution's extracurricular offerings, Furman is participating in the Education Advisory Board's Experiential Major Maps collaborative. At Queen's University in Canada, an experiential map "alerts students to both curricular and cocurricular programming, ensuring that they are aware of both academic and parallel non-academic enrichment opportunities," [an EAB report said](#).

As at other campuses that leaned into their career-focused qualities, the Furman Advantage has led to faculty plotting out how academics instill in students career competencies. Some departments also spend several hours with upperclassmen during informal retreats or meetings discussing how what students learned prepares them for the workforce. Already, nine departments have an action plan for formalizing the link between academics and career competencies. The remaining 15 departments are expected to attend campus workshops in the summer of

2020 to finalize their own.

Departments will have leeway with how they communicate those linkages, but student self-reflection about their personal growth and what lies ahead will be key. It's about "getting students to reflect on their identities, their values, their strengths, their potential career paths and how their experiences at Furman have prepared them for that," Pontari says. ■



## Key takeaways

- Co-op and internship opportunities signal institutions are serious about workforce readiness and are a powerful tool in underscoring what students learned in the classroom.
- Co-ops and internships require considerable overhead on a large scale. That includes dedicated co-op advisers, an outreach staff to secure new employer partners and a registrar's office able to manage students' course needs.
- Students in co-ops can be reconnaissance agents for colleges and universities, returning to the classroom with intel about the latest software or business approaches in the world of work that can be integrated into curricula.
- Liberal arts education can be defended with the argument that teaching students to think, explore, question and create is the last line of defense adults have against the disruption of artificial intelligence and automation.
- Some private colleges are introducing mini terms to develop soft and hard workforce skills, such as résumé writing, the art of the handshake and popular software used in corporate offices.
- Consider developing career fairs that encourage employers to teach students something new, be it a trick in Excel or some other industry insight.
- Some colleges make mandatory learning experiences such as traveling research opportunities, volunteer work, film editing or short-term jobs tied to students' studies.
- Large donations can be used to supersize experiential learning offerings by paying for new career advisers and developing concentrated mentoring cohorts and student experiences.
- Career advisers should see students early and help them craft personal stories that resonate with employers.
- Other experiential learning opportunities can come from third-party providers. One company serves as a clearinghouse for micro-internships that allow students to apply for multiday or multiweek jobs with big firms to complete important tasks, such as web content, data analysis and market research.



# Conclusion

Is there a skills gap? That's almost beside the point. Colleges of all stripes—private liberal arts institutions, community colleges and larger public and private universities—are responding to a perception among interest groups and some employers that higher education is missing the mark on producing work-ready students. That narrative has seeped into the public discourse, likely contributing to the sinking stature higher education has among adults surveyed in recent years. For adults 18 to 29 years of age, the ones likeliest to attend college, just 41 percent think college is very important, down from 74 percent in 2013, according to a Gallup survey.

In many ways, places of higher education are repackaging what they've always been doing—offering a liberal arts education that's supposed to prepare students for a lifelong pursuit of inquiry across multiple careers—by adding terms, phrases and concepts that

resonate with employers. More institutions are adding workforce competencies to their descriptions of majors, allowing students to appreciate an academic pursuit both in terms of research and the rhetoric of the workforce, which underscores their knowledge of the job-ready skills employers seek. Career and academic advising, long fenced off from each other, are increasingly working together to create a shared language of workforce readiness within academics that signals to employers incoming students can write both term papers and business plans.

Some colleges are molding their academic offerings around the work of third-party groups that have researched what it is that employers want in their new hires. Those competencies call for some modern digital know-how, but others are consistent with what the liberal arts has been offering for decades: critical thinking, oral and written skills, teamwork, and collaboration. Other

colleges are also expanding their experiential learning opportunities to reach more students so that most graduates walk across the stage with some combination of work experience and a long research project. Those aspects of a student's education address two concerns: those of employers who want to see more graduates with relevant work experience and those of students who say they find a college more valuable if they were able to apply what they learned through work or research.

Then there are the institutions that had a running head start and are still enhancing their work-preparation bona fides. Some institutions where virtually all students work during part of their time enrolled are also overhauling their course catalogs with combined majors to merge often disparate disciplines such as computer science and English. Other colleges with a history of work integrated into their academics are introducing short-term convenings for students to learn how to write résumés, update their online professional portfolios and become familiar with the software used in the fields they aspire to enter professionally.

The reforms underway are sincere. Whether they alter the public's perception of the value higher education engenders will require patience. Forces bigger than the collective might of higher education dictate the world of work. But it's hard to feel sorry for higher education. The sector has long argued it prepares students for the jobs of tomorrow. After positioning itself long ago as the chief developer of U.S. talent, higher education must demonstrate it's still up for the job. ■



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# Persons Quoted

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