

# THE FUTURE OF WORK

AND WHAT IT MEANS FOR  
HIGHER EDUCATION

## A THREE-PART SERIES

### PART ONE:

The changing workplace and the dual threats  
of automation and a gig economy.

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### PART TWO:

How higher education can better meet  
the demands of the 21st century workforce.

### PART THREE:

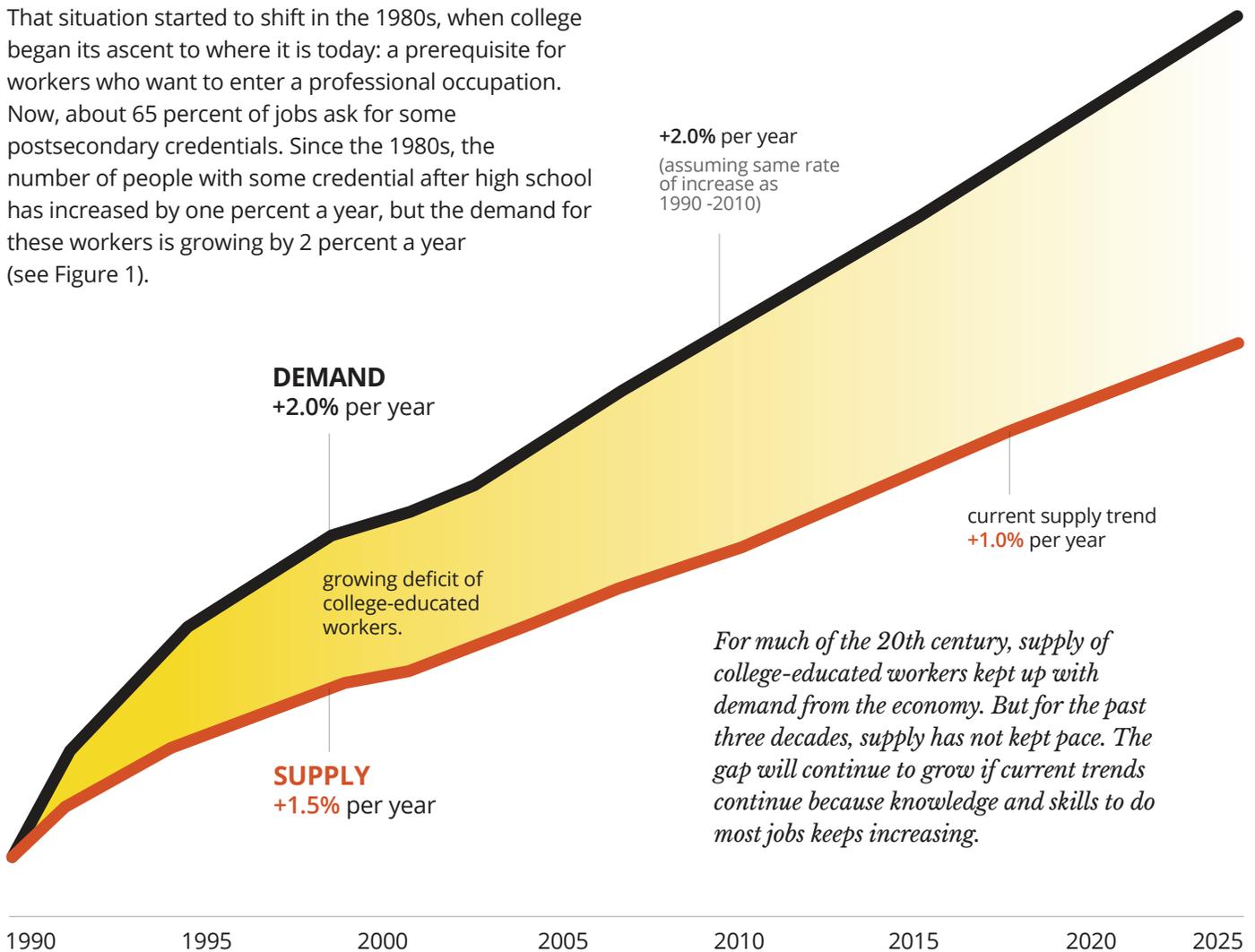
The colleges and  
universities already filling  
the needs of the next  
economy.



**NOT SO LONG AGO, THE DIVISION IN THE WORKPLACE WAS OBVIOUS.** If you went to college, you became the boss. If you didn't make it that far, it was relatively easy with no more than a high school education to land a rank-and-file job in a factory or office. At the end of the 1970s, only 28 percent of jobs required training beyond high school.<sup>1</sup>

That situation started to shift in the 1980s, when college began its ascent to where it is today: a prerequisite for workers who want to enter a professional occupation. Now, about 65 percent of jobs ask for some postsecondary credentials. Since the 1980s, the number of people with some credential after high school has increased by one percent a year, but the demand for these workers is growing by 2 percent a year (see Figure 1).

**FIGURE 1**  
**HELP NEEDED**



Source: Georgetown University Center on Education and the Workforce

The spread between supply and demand explains, in part, why the United States still has six million unfilled jobs. In a nation near the economic threshold of full employment, there are not enough job candidates on the market. Another reason for the unfilled jobs, according to employers, is that they can't find workers with the right set of skills.

This disconnect between what college provides and employers want has widened in recent years. Take, for example, a finding from a Gallup survey where 96 percent of college and university provosts said students were prepared for the job market, but only 11 percent of business leaders agreed.<sup>2</sup> Or a widely cited study by three economists in 2014 that concluded this: "Having a B.A. is

less about obtaining access to high-paying managerial and technology jobs and more about beating out less-educated workers for the barista and clerical job.”<sup>3</sup>

In many ways, the bachelor’s degree is the new high-school diploma. A 2017 study published by the National Bureau of Economic Research found that while the wage premium of the bachelor’s degree grew rapidly in the 1980s, its growth slowed in the 1990s, and has largely remained unchanged since 2010. The reason? Technology. In all industries, automation has begun to supplant jobs held by workers with four-year degrees. So some workers with a bachelor’s degree are forced into lower-skill jobs with lower wages.

A college degree used to serve as an indicator that the recipient had a good grounding in a discipline and was ready—with minimal training—to enter the workforce. That understanding no longer exists. Employers report that new college graduates have technical or theoretical skills, but often lack the qualities needed in today’s workplace: problem solving, skill in written and oral communication, critical thinking, and the ability to work in groups.

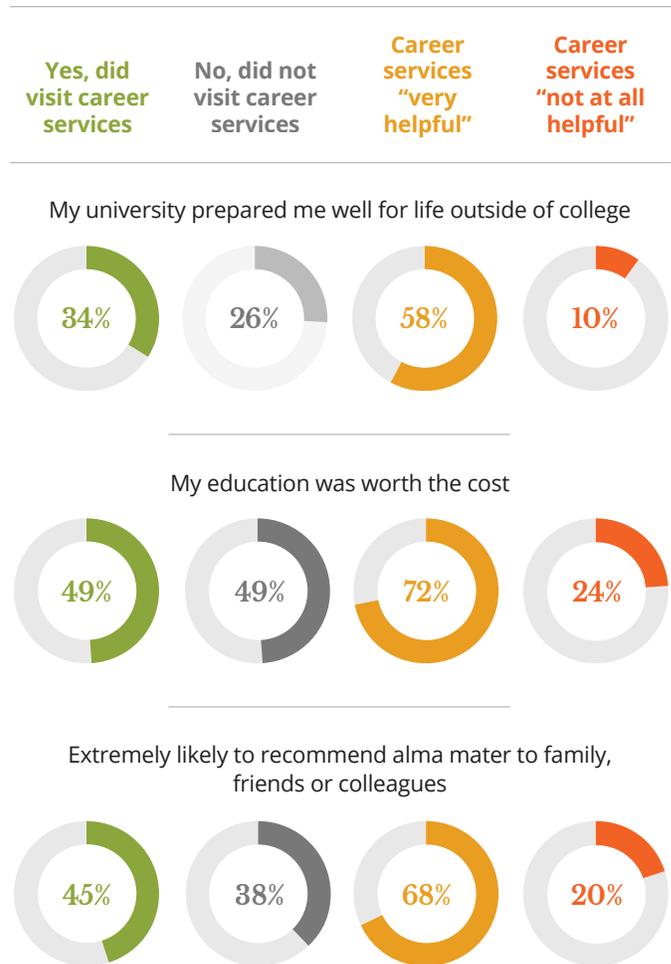
### SHIFTING THE CURRICULUM AND STUDENT SERVICES

Colleges are slowly adjusting their academic programs and approaches to incorporate what employers say they want. But change is slow. Some tenured professors considered experts in their field may see no need to change an approach to teaching they have used for decades. The campus office perhaps most responsible for success after college—career services—is still an afterthought at many institutions. No wonder 40 percent of recent graduates (those who graduated between 2010 and 2016) never even visited their career offices, according to the Gallup-Purdue Index. Among those who made a visit, only 17 percent found it helpful. But in a sign that colleges should invest more in career services, the survey found that students who found career services helpful were also more likely to say that their institutions prepared them for life and was worth the cost (see Figure 2).

FIGURE 2

## PAYOFFS OF THE CAREER CENTER

*How college graduates view their alma maters based on their experiences with career services.*



Source: Gallup-Purdue Index

The students most disappointed in career services, according to the Gallup-Purdue Index? First-generation students, who often lack the social capital to network for jobs, and undergraduates with heavy debt loads, who need to find work after graduation to pay off their loans—both groups that are critical to increasing retention and graduation rates.

These findings from the Gallup-Purdue Index, and shifting student and parental attitudes about the purpose of college, make clear that career services

desperately needs to be overhauled on many campuses. Given the increasing emphasis on outcomes for graduates and the need for colleges to prove their value to prospective students, institutions can no longer afford to treat career services as an afterthought, nor can they ignore the rapidly shifting needs of an economy when workers are not only expected to go to college, at a minimum, but to also keep learning and updating skills throughout their lives.

“Your skillset should be obsolete by the end of your career,” said Clifford Carrubba, a professor of political science at Emory University, who founded and directs the Institute for Quantitative Theory and Methods, an innovative new program that equips liberal arts students with data analysis and statistical skills that are increasingly valuable in the marketplace. “You should be working frantically to keep up throughout your career.”

Emory is among a growing group of institutions that have begun to reimagine what their institutions need to look like in the next decade to keep up with 21st century economy. In the first two parts of this three-part series, we outlined what the future of work might look like and explored the approaches to education that campuses need to consider to prepare for what’s next in the job market. In this third and final part of the series, we will look briefly at how four institutions have realigned their curricula and career services to better prepare students for what’s next. In profiling these four campuses—Emory, the Stevens Institute of Technology, the University of Utah and the University of Iowa—our intention is not to name them the “best,” but to give a sense of the range of tactics that colleges are employing to better align their offerings to the future job market.

## Emory University

### CROSS-DISCIPLINARY DEGREES FOR CROSS-DISCIPLINARY JOBS

At Emory, Carrubba is trying to give undergraduates the degree he wishes he had received, one combining data analysis with study of policy and theory. He is having success but it is an uphill fight.

“There’s a bizarre philosophy that there isn’t time to integrate these skills, that there is only time to study theory,” said Carrubba, a professor of political science. “If you never get to analysis, all you can do is regurgitate past knowledge.”

Carrubba believes that young people who are cross-trained in the writing, thinking, and discipline inherent in the liberal arts and in data science will be best positioned for the workforce of tomorrow. “Your success depends on your ability to draw inferences and conclusions from the explosion of data in the world.”

Carrubba’s dream has become the Institute for Quantitative Theory and Methods within Emory’s College of Liberal Arts. The institute offers bachelor’s degrees in quantitative social sciences and applied mathematics and statistics, with a new program in public policy analysis starting in spring 2018. The institute is not shy about its

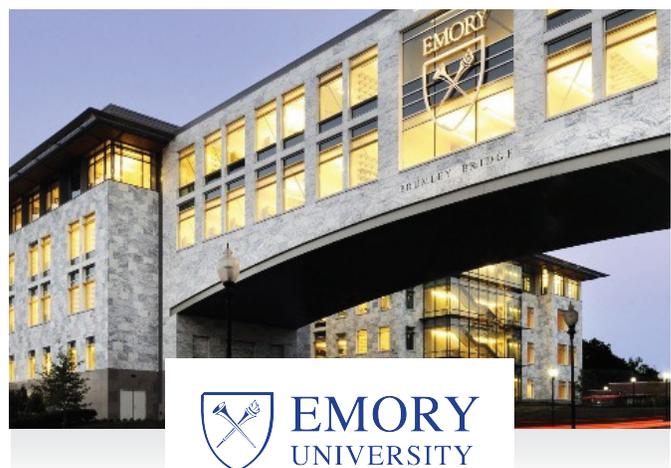


Photo courtesy of Emory University

come-on. On the front page of its website, it says that liberal arts graduates with data management and analysis skills earn \$12,700 more annually than those without such skills.

The programs started with five students but have quickly caught on. Now, in its fourth year, more than 100 students are enrolled. Within four years, the program expects more than 300 students, said Adam Glynn, an



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– **Clifford Carrubba** / Professor of Political Science / Emory University

associate professor of political science and the associate director of the institute.

“Ten years ago, when I had to teach statistics to political science students, they complained a lot more than they do now,” said Glynn. “Either we have gotten better at presenting the material, or they have a better understanding of the realities of the job market.”

Glynn was so excited by what Emory was creating that he left a professorship at Harvard in 2014. “I was just excited about the purely interdisciplinary nature of it. Essentially what we are doing is creating an applied statistics program if you were creating it now as opposed to the ‘80s, when most universities created theirs.”

The institute has increasingly focused on exposing its students to the workforce, placing them in internships at such employers as Ernst & Young, the Federal Reserve Bank of Atlanta, and Oldcastle, the largest manufacturer of building supplies and materials in the U.S. Among other tasks, the Emory students have been helping the employers to understand business issues through data visualization and analysis of markets.

Ryan Joye, of Allentown, N.J., arrived at Emory three years ago as a freshman with an interest in mathematics, but no idea of what he wanted to major in. He went to a majors fair his second week at college and was convinced to give quantitative social sciences a try.

“You see the massive amount of data collected everywhere—being able to speak that language and find meaningful information in that data is huge,” said Joye. “I think it differentiates me from almost every other student at Emory.”

His first two years were heavy with quantitative classes in data analysis and statistics. When he began to take more liberal arts classes in his final two years, Joye said he brought more knowledge of data sets and how they might reveal answers to policy questions, something he used in group work and in papers.

As he began his senior year, he already had a job lined up, at Ernst & Young, where he interned over the summer. He will work in the forensic technology and discovery services division, helping devise machine learning models for detecting fraudulent or risky legal and financial transactions. “They were impressed that I was able to learn every technology they threw at me,” said Joye.

Joye was one of at least three summer interns among 24 from the institute who were offered full-time jobs, said Debora Owens, the program coordinator at the Institute for Quantitative Theory & Methods. “Every employer who has responded to our poll is completely satisfied,” she said. “The only intern who reported a below-average experience was a student who thought she was underutilized. The company was not prepared for her to complete projects as quickly as she did. So she was bored.”

Carrubba is happy with the progress of the program, although it took a long time to get here. He arrived at Emory in 2000 with the idea for the institute, but it didn’t start until 2011. “I have just been chipping away at it,” he said. “Everyone was thinking of data. I have also talked about the flip side: data science really needs the liberal arts too. If you want really effective data scientists, you have to have people who understand the field they are studying.”

# Stevens Institute of Technology

## RETHINKING THE CAREER CENTER

The Stevens Institute of Technology in Hoboken, N.J., is certainly not the only institution that has revised its approach to career services in recent years. However, with academic offerings focused heavily in fast-growing occupations in the STEM fields and a location in the shadow of a job mecca, New York City, there was little pressure on Stevens to do things differently. “But we wanted to get ahead,” said Lynn A. Insley, executive director of the Institute’s career center, “because we knew the economy was changing and the job market for our graduates would change, too.”

Like many colleges, Stevens wanted students to start thinking about career planning and services even before they started classes—at freshman orientation. Yet officials knew that first-year students are often overwhelmed at orientation and in their first few weeks on campus trying to navigate everything that is new to them. “We seem to expect first-year students to know how to use the career center even though they didn’t have one in high school,” Insley said.

So Stevens focused its efforts on introductory videos so that students would know more about the career center and what to expect on their first visit. Many colleges follow a “build it and they will come” mentality with the career center, yet the Gallup data show that most students never visit. Stevens is more intentional about how to encourage students to use the services. “We don’t expect that students will come to us initially,” Insley said, “so we’re thinking ahead for them.”

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– Lynn A. Insley  
Executive Director / Career Center  
Stevens Institute of Technology

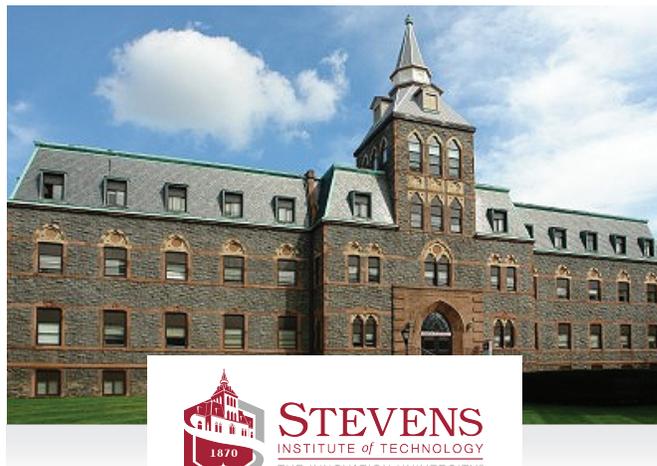


Photo courtesy of Stevens Institute of Technology

Every first-year student is assigned a career advisor, and during winter break freshmen and sophomores shadow alumni at their jobs. While a daylong shadowing assignment might not sound like much of a significant experience, Insley explained that the preparation required for the day is almost as important as the visit itself.

To get ready for job shadowing, students must research the mechanics of the job they’re following, create their first résumé, investigate the culture and dress of the company, and consider what they want to learn while at the employer and develop questions for a series of informational interviews they will have on site. When students return to campus, they put the job shadowing on their résumés and prepare talking points for what they discovered about themselves and their career aspirations that can be useful for interviews later on. “This way they have something to talk about beyond their major and why they decided to pursue it,” Insley said.

Those early experiences with career services help students as they move into more intense work experiences in their junior and senior years. Stevens is among a handful of schools that provide co-ops to its students, mostly in the STEM fields. Co-ops are often superior to the internships offered through many schools because they are part and parcel of the undergraduate

experience. They are paid positions and, as a result, require more substantive work since students are dedicated full-time to a job and not splitting it with course work.

The co-ops are part of a larger, and more recent effort, at Stevens that follows national trends in higher education to offer more undergraduate courses, programs, and extracurricular activities that promise to cultivate an entrepreneurial mindset. For students, running their own business offers the creativity and independence that traditional careers seem to lack and offers hope for

surviving in an economy in which industries expand and contract with alarming speed.

At their heart, entrepreneurship programs are an attempt by colleges to respond to pressures to turn out work-ready graduates. Administrators see this form of experiential learning as a way to prepare students for an unstable economy in which on-the-job training is increasingly rare. “The best preparation for these students in the future job market is preparing them for the unknown,” Insley said.

## The University of Utah

### LIBERAL ARTS GRADUATES FOR THE WORKFORCE

The light turned on for Andrea Miller, of the continuing education division at the University of Utah, as she heard a presentation about résumé analysis and job outcomes. Liberal arts students were in demand by employers, the research said, but if they have specific technology skills, “they double their potential job market and add to their salaries.”

That data led Utah to create a new series of certificate programs called Degree Plus. The certificate programs—in data analysis, instructional design, content marketing and management, operations analysis, and digital communication tools for creative professionals—all began in the fall of 2017. About 50 students registered, more than expected, says Miller. Many of them are recent graduates in liberal arts fields.

The five programs were chosen because research showed they have particular labor-market value amid shortages of qualified professionals to fill the jobs, she said.

The university is taking a more comprehensive approach to coaching students and easing the transition into the workforce, said Stan Inman, director of the career and professional center. But a recent poll of soon-to-be liberal arts graduates demonstrated how far the university has to go.

About 65 to 70 percent of the respondents said their

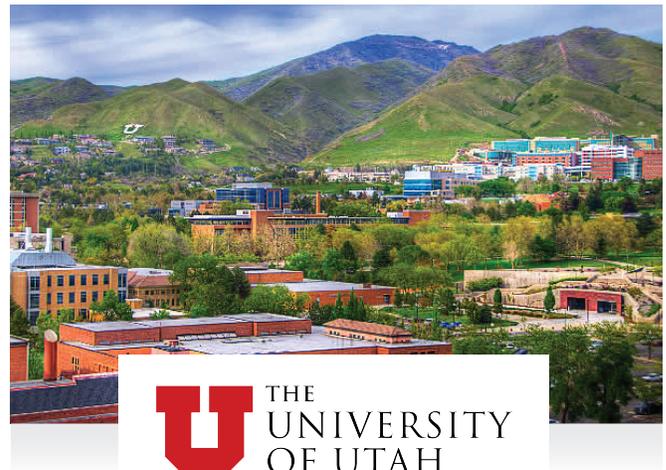


Photo courtesy of University of Utah

primary goal upon graduation was employment. Of that group, 65 percent reported having job offers. Many liberal arts graduates move on to graduate school, but even given that, the poll shows a large proportion of future graduates without jobs.

Miller meanwhile conducted a different poll. The results found that soon-to-be-graduates were seeking an additional credential from a reputable university, at a low cost, and they wanted a chance to network with professionals in their field.

“The students see continual change in what the labor market wants,” Miller said. “They are looking for exposure to careers and areas of high job growth.”



The programs all take six to eight weeks to complete, at a cost of \$1,499, which Miller called the lowest price possible. The classes meet two nights a week for three hours, and some have lab sessions on Saturdays. Students who complete the programs receive a certificate and a digital credential, which can be shared on LinkedIn profiles, Facebook, Twitter, other social media accounts, and online résumés.

“All of this is hyperlinked back to the University of Utah, and has metadata behind it,” said Miller. “Possible employers can verify who offered the credential and what competencies the students have as a result of completing it.”

Each program is taught by a professional in the subject-matter. The instructors all have two or three secondary instructors, and each course is designed to have guest panels of other professionals. The goal—between instructors, secondary instructors and guest panelists—is to give students plenty of networking opportunities.

Each student in the program also gets access to a career coach. Students are required to visit with the coach for at least 20 minutes, but they can have up to 90 minutes of coaching. (Any time beyond that incurs additional fees.)

In looking for opportunities for new programs, Miller

said, “I am always asking, ‘what is the market needing? And how well is it being met?’ Our programs in general are always reinforcing the priority of lifelong learning.”

Inman said he doesn’t see the new certificate program as competing with the university. It is a reflection of the times, he said. “We are feeling more direct expectations about outcomes for students,” he said. “We want to put in place accountability around the value of the education we are providing.”

As part of that effort, he renamed all of the advisers who work for him “career coaches.” His department used to assign dedicated advisers to each of the undergraduate colleges and schools at the university. But that meant that some students might have to wait weeks to get an appointment. Now students can go to any adviser they want.

“We don’t want any student to leave without knowing who they are, what they have taken away from their field of study, and how they see themselves practicing in their chosen profession,” Inman said. “We’re excited to work with the Degree Plus program as an option for students who want to increase their skillsets.”

Miller’s division is monitoring how well the programs do this first year, but given the success already, it is looking to add three new certificate programs in fall 2018.

# The University of Iowa

## MAKING CAMPUS JOBS A LEARNING EXPERIENCE

For most students, campus jobs are often seen as necessary burdens that subtract from their studies or their social lives. But the University of Iowa views those jobs as an important addition to an undergraduate education, much like student activities or athletics.

Universities, said Sarah Hansen, Iowa's associate vice president for student life, "neglect a large body of students who spend a lot of time in campus jobs—working in food services, as receptionists, lifeguards."

What students can learn on those jobs and integrate with their academic work is how to communicate, how to work with people who are different, how to be flexible, how to resolve conflicts. At Iowa, job supervisors meet with student workers twice a semester and ask them to ponder four questions:

- How is this job fitting in with your academics?
- What are you learning here that's helping you in school?
- What are you learning in class that can apply here at work?
- Can you give me a couple of examples of things you've learned here that you think you'll use in your chosen profession?

The questions are part of a concerted effort at the university, called Iowa GROW (for Guided Reflection on Work), to make campus work experiences more relevant by encouraging students to connect the mundane time spent on the job with their academic and career goals. The university requires the program for more than 2,000 undergraduate workers in the student-life division

"Some students think that all they are doing is making sandwiches," Hansen said. "The reality is that they have learned how to work with difficult co-workers. They have learned that jobs have given them places where they are expected to show up. They've learned how to write e-mails without smiley faces on them."

The idea for GROW came about a decade ago from George Kuh, the founder of the National Survey of Student Engagement. Two-thirds of all undergraduates



Photo courtesy of University of Iowa

work, and about a quarter of students work on campus. Kuh thought institutions needed to do more to better connect learning on the job with their academic experiences for two key reasons. First, students who understand what happens in the classroom matters outside of it are more likely to stay in school. Second, helping students transfer their knowledge from one context to another is what gets graduates hired because it allows them to showcase skills that can't be easily listed on a résumé.

"Too many students leave college early because they don't see any benefit," Kuh said. "Whether it's 'Introduction to Psychology' or 'The History of Western Civilization,' they don't see any relevance to current life. Most students find concrete experiences easier to understand and process, and work is a concrete experience."<sup>4</sup>

Today, GROW is used by more than 100 colleges worldwide, encouraged by the results of the Iowa program. Iowa student workers who participate in GROW are more likely than other workers on campus to report that their jobs helped them improve their writing, speaking, and time-management.<sup>5</sup> Participants are also more likely than non-participants to perceive their jobs as good preparation for full-time employment and to report that their jobs helped them develop specific skills such as problem solving, and working with individuals from diverse backgrounds, cultures, and experiences.

## PREPARING FOR THE FUTURE OF WORK

Colleges and universities have long questioned the role they should play in supplying workers to the job market. On one hand, training graduates for jobs solidified higher education's business model, and a tighter connection between education and the workforce strengthened the value of degrees. On the other hand, focusing solely on job outcomes overshadowed the broader mission of higher education to prepare students to be citizens.

Given that the global economy demands ever more skills

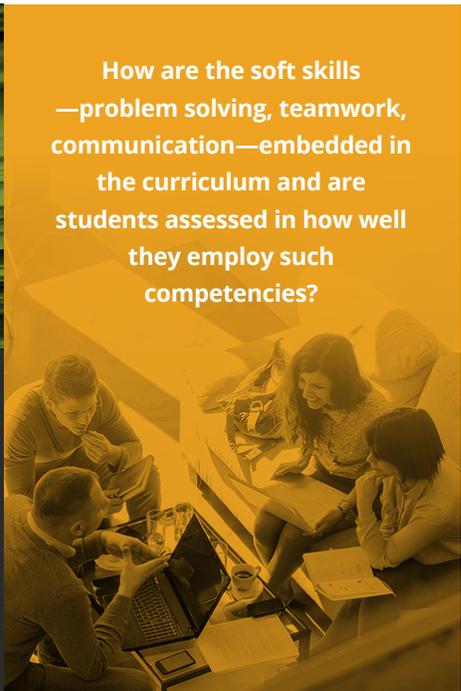
for an expanding base of knowledge, institutions cannot simply prepare students for the jobs that exist today. For institutions to survive and thrive in a new world of work, it's clear from the findings of these three papers that higher education will need to broaden its mission to better prepare undergraduates in the so-called soft skills. Institutions must reimagine how they can provide continual learning that's offered in short spurts and just-in-time to alumni who will need to renew their skills throughout life.

## QUESTIONS TO CONSIDER

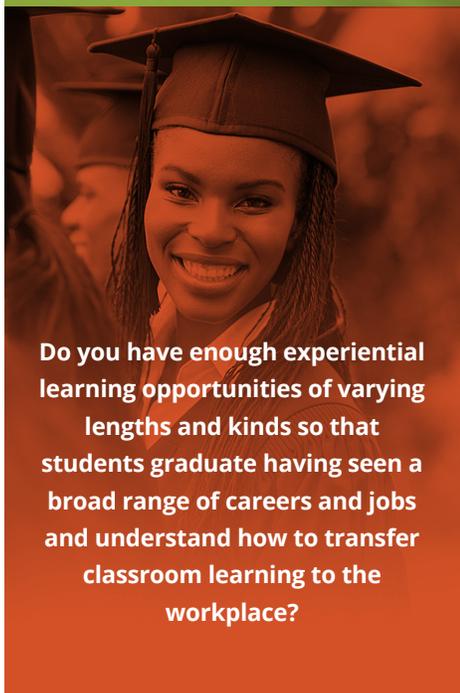
*As college and university leaders consider how their institutions can successfully approach the future of work, here are some questions for them to discuss:*



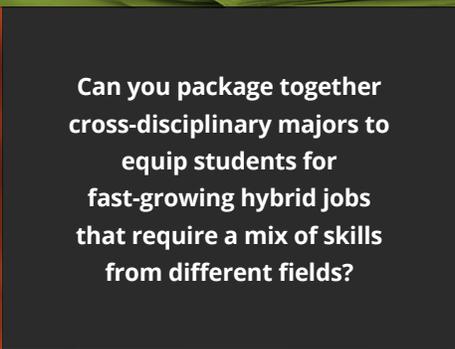
What types of new credentials or transcripts are necessary to communicate learning outcomes of your students to employers?



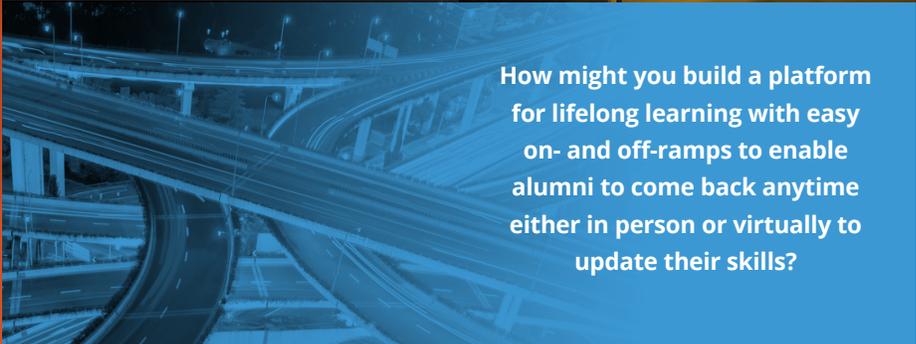
How are the soft skills—problem solving, teamwork, communication—embedded in the curriculum and are students assessed in how well they employ such competencies?



Do you have enough experiential learning opportunities of varying lengths and kinds so that students graduate having seen a broad range of careers and jobs and understand how to transfer classroom learning to the workplace?



Can you package together cross-disciplinary majors to equip students for fast-growing hybrid jobs that require a mix of skills from different fields?



How might you build a platform for lifelong learning with easy on- and off-ramps to enable alumni to come back anytime either in person or virtually to update their skills?

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## SOURCES

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- <sup>1</sup> Anthony P. Carnevale and Stephen J. Rose, “The Undereducated American,” Georgetown University Center on Education and the Workforce, 2014.
- <sup>2</sup> Gallup surveys of business leaders and chief academic officers, 2014.
- <sup>3</sup> Paul Beaudry, David A. Green, Benjamin M. Sand, “The Great Reversal in the Demand for Skill and Cognitive Tasks,” NBER Working Paper, 2014.
- <sup>4</sup> As quoted in Ben Gose, “How to Make Students’ Campus Jobs More Meaningful,” The Chronicle of Higher Education, September 15, 2014.
- <sup>5</sup> Peter Felten, John N. Gardner, et al. The Undergraduate Experience: Focusing Institutions on What Matters Most, Jossey-Bass, 2016.



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