



What would it take to enable all workers to develop the skills to succeed in a changing labor market?

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About Urban's Next50

The Urban Institute was founded 50 years ago by President Lyndon B. Johnson to provide “power through knowledge” to help solve the problems that weighed heavily on the nation’s hearts and minds. Today, we’re exploring promising solutions to advance equity and upward mobility and identifying what transformational leaders need to know to drive forward groundbreaking ideas. This brief is one of our eight-part Catalyst series, in which we share what it would take to advance bold solutions over the next 50 years.

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What would it take to enable all workers to develop the skills to succeed in a changing labor market?

We envision a future in which opportunities for lifelong learning enable our nation's increasingly diverse workforce to meet changing job requirements and thrive in family-sustaining employment throughout their working lives. This reimagined postsecondary education and training system—encompassing colleges, other training and service providers, the workforce development system, and employers—would offer multiple affordable pathways for high-quality learning and skill-building aligned with the labor market and the opportunity to secure good jobs, with costs equitably distributed among students, businesses, and government. In this future postsecondary education and training system, employers would communicate clearly about the skills needed for jobs, hire based on those skill needs, and make robust and transparent investments in their workforce and in the design and delivery of postsecondary education and career advancement programs, from short-term training and upskilling to two- and four-year college degrees. These investments in education and training would also be accompanied by improvements to the quality of jobs so these investments result in employment that provides economic security, stability, and mobility.

Government, colleges, and other training and service providers around the country need to invest in strategies aimed at advancing this vision:

- Colleges, including two- and four-year institutions, design programs and provide student supports to help more people complete necessary coursework, programs, and credentials to connect to employment and advance in their careers.
- Colleges and other training providers offer quality options for more flexible and accelerated models of learning and credentialing that align with student needs and job requirements and support learning throughout a person's working life.
- Employers effectively communicate their human resource needs and invest in skill development so all workers build the skills they need for a rapidly changing labor market.
- States, the federal government, and private providers of capital—both for-profit and nonprofit—offer a range of financing approaches that expand access to high-quality postsecondary education and training opportunities for students.

- The federal government, states, colleges, and private firms provide information about outcomes to help students decide whether and where to seek postsecondary education and training.

Some of these strategies are already being implemented. All five, if pursued effectively and at scale, could prepare students and workers to successfully build careers, contribute to the American economy, and adapt to a changing labor market.¹

Because a college degree has become increasingly important to securing family-sustaining employment, more Americans are going to college. Students are older and increasingly diverse, with wide-ranging goals and needs. And while the postsecondary education and training system meets the needs of many students and workers, a large number fall through the cracks. People with low incomes tend to do worse than higher-income students, and black, Latinx, and Native American people obtain college degrees at lower rates than whites (Shapiro et al. 2017). Moreover, in the past 30 years, the price of a college education has risen far faster than inflation while wages have stagnated, leaving many workers struggling with debt (Ma et al. 2017).² Facing these realities, many people have started to explore alternative pathways, including online learning, shorter-term credentials, and apprenticeships. However, many of these efforts have not been scaled or are disconnected from the broader postsecondary education and training system.

The challenges faced by people seeking postsecondary education and training are compounded by the lack of reliable and accessible information on the labor market value of various credentials and training programs in a complex labor market environment (Looney and Yannelis 2018). People often do not know what education or skill-building programs are worth the investment, and employers lack specific knowledge on the skills associated with particular credentials. As a result, many employers tend to rely on credentials, particularly college degrees, as a proxy for job qualifications (Fuller and Raman 2017).

Global competition, technological change and automation, and the rise of contractual and temporary work arrangements will continue to transform the structure of employment and the skill requirements for American workers (Conway and Dawson 2016; Weil 2014). Without comparably far-reaching changes to create a postsecondary education and training system that is aligned with the labor market and student needs, too many people will be unable to build or update the skills they need to thrive, blocking opportunities for upward mobility and exacerbating economic inequities. Reforms to postsecondary education and training will not be enough to support workers in low-wage occupations; efforts to improve job quality are equally necessary. Through Next50, we offer a set of

promising ideas and knowledge priorities for tackling job quality, as well as other issues crucial to supporting economic security.³

Changemakers in the public, private, and nonprofit sectors lack essential information to design and implement strategies for spearheading major structural changes:

- College leaders need better information to scale evidence-based approaches that help students complete programs of study and earn credentials. This information includes how to match academic, financial, and personal supports to student circumstances and needs, how much different models cost, and what effective implementation looks like in different institutional contexts. A program of research that builds on lessons learned could help colleges implement and scale evidence-based programs and empower more students to complete degrees and earn industry-recognized credentials.
- College leaders and other training providers adopting new learning models (e.g., online learning, competency-based education, and new models of work-based learning) need better evidence about what works *for whom*. A program of knowledge-building and continuous knowledge-sharing focused explicitly on the effectiveness of new models for different types of learners, especially those who are disadvantaged or underserved in college programs, could inform innovation and protect students. Such information would help policymakers and other funders support effective models and guard against the risks of experimentation for students and workers.
- Employers, colleges, and other training providers would benefit from an ongoing program of data collection and analysis that systematically documents employer skill-building priorities, investments, and lessons learned from employer-based experimentation. This information could help employers invest more effectively in incumbent worker training and better articulate their skill needs when partnering with institutions of higher learning and workforce training providers.
- Policymakers, colleges and other training providers, public and private providers of education financing, and students and their families could all benefit from more information on the return on investment (ROI) of the range of educational and training programs available. Rigorous measures of ROI help develop these models. But a carefully monitored effort to test and assess new financing models, including protections for participating students, is also needed to create the conditions for responsible innovation and expansion.

This brief draws on interviews and roundtable conversations with a broad array of changemakers (see acknowledgments for the complete list) who highlighted innovative solutions being explored across the country and identified the gaps in facts and understanding that hinder their implementation. They also suggested opportunities for new knowledge-building that could inform and accelerate effective reforms to our nation's system for postsecondary education and skill-building so it meets the needs of tomorrow's students, workers, and employers.

Advancing Solutions: Postsecondary Investments, Knowledge, and Innovations

Multiple strategies are necessary to meet the complex and diverse education and skill requirements of American workers and employers in a future labor market. This brief focuses on the major structural changes that would enable adults of all ages to access the postsecondary education and training they need to be successful.

Yet realizing these goals is about more than postsecondary education. One of the most important building blocks for a skilled workforce is the educational foundation built from birth through high school. A solid early foundation gives young people the academic skills and knowledge needed to thrive in postsecondary education and the labor market, as well as the skills for lifelong learning and career navigation. Fully realizing the goal of giving all workers the opportunity to thrive in a changing labor market means continuing to improve the way we prepare children and youth for the world that lies ahead. We also recognize that education is more than just preparing the workforce; it is a fundamental part of developing an engaged citizenry and supporting thriving communities.

This brief focuses on five interlocking solution sets to realize the vision of a reimaged postsecondary education and training system that meets the needs of adult students and workers.

- The first solution set focuses on supporting students as they complete programs and obtain the degrees and credentials needed for labor market success.
- The second solution set is aimed at making postsecondary education and training more accessible by providing more flexible options for learning and assessment.
- The third solution set recognizes the important role of employers in communicating what skills are needed, in the delivery of postsecondary education and training, and as customers of higher education institutions and workforce development organizations.

Together these three solution sets offer new ways of delivering postsecondary education and training that meet the needs of students, workers, and businesses today and in the future. To ensure these innovations are available to those who need them and to guard against the risks of experimentation, we have identified two additional solution sets:

- The fourth solution set involves expanding funding options so existing and new models of delivery are available to students.
- The fifth solution set concerns the new generation of efforts to help potential students make informed decisions when deciding what program to enroll in and how much to spend.

As changemakers in postsecondary education and training, government, and industry implement and expand on the five solutions sets, they will generate new insights about equipping workers with the education and skills required for ongoing success in a changing labor market.

Solution Set 1: Support Students' Success

In a future labor market, a college education will continue to be important, even as new approaches to learning and credentialing emerge. The more we can help students complete programs and obtain credentials valued in the labor market, the better their economic prospects will be.

Efforts to help students complete postsecondary education or training yield important lessons. Approaches with evidence of success need to be elevated and expanded, especially to open-access institutions that serve the most students. Other approaches, which are not as well tested, require further evaluation to understand their effectiveness. We do not discuss all these solutions in this brief; instead, we focus on those that surfaced from our engagement with changemakers as having the potential to give students, especially those who are disadvantaged or underserved in traditional college programs, the greatest chance to access job and career advancement opportunities.

Expand and Improve Pathways to Completion

Improving employment prospects tends to be a primary motivator of seeking college-level education and training. Colleges, and community colleges in particular, offer both academic and career-focused programs for disadvantaged or underserved students. Students are met with a confusing array of choices, lack support in sharpening their educational and career goals, and often spend time and resources on coursework that is not aligned with these goals, ultimately accumulating excess credits and taking longer to complete programs.⁴ Students who come unprepared for college often languish in developmental or remedial education courses, never making it to the credit-bearing classes needed to progress toward a degree (Bailey and Cho 2010).

Several solutions have been tested in recent years to help more students determine what they want to achieve with their postsecondary education and how to support those goals. Giving students a more structured and intensively supported experience can make a difference. The City University of New York's (CUNY) Accelerated Study in Associate Programs (ASAP) has emerged as a promising example of this approach in community colleges (Scrivener et al. 2015). Started as a pilot in 2007, ASAP combined full-time programming, chunked or blocked scheduling, robust advising and support, and full coverage of the costs of school for students. After a rigorous third-party evaluation showed strong impacts and ROI, the program was expanded across all of CUNY's community colleges and is being adapted for CUNY's four-year colleges and replicated in other states.⁵

“The elite model of, you’re 19, come in for four years and come out cooked, is no longer appropriate if it ever was. The linearity of higher ed needs to be broken.”

—**Gail O. Mellow**, LaGuardia Community College, in *“Why Harvard, Yale and Stanford May Not Be the ‘Best’ Colleges,” NPR*

Community colleges are supporting student persistence and completion by implementing a strategy known as “guided pathways.” The guided pathways approach, which gives students a smaller number of options, clearer information about which paths to take to complete degrees, and crucial support along the way, has gained traction (Bailey, Jagers, and Jenkins 2015). As of 2017, more than 250 institutions were spearheading this approach (Bailey 2017). Pierce Community College in Washington State received funding in 2016 to establish guided pathways. When the college was selected as a finalist for the Aspen Prize for Community College Excellence in 2019, it attributed its success to implementation of the guided pathways approach.⁶ A key feature of such efforts is the provision of academic, financial, and personal supports, sometimes through specialized staff called college or career navigators.

To help retain students and establish a clear path to graduation, colleges are reinventing the ways developmental and remedial education is delivered, including strategies to better identify and target academic needs, integrate developmental education within college-level courses, or allow for “corequisite” models in which developmental courses are taken with college-level courses. Washington State was an early innovator in reforming developmental and remedial education through its Integrated-Basic Education and Skills Training model. More recently, the California State University system began implementing a new policy that replaced noncredit prerequisite remedial courses with

“stretch” or corequisite courses that have academic support attached.⁷ Rather than using standardized tests to assess developmental needs, California is using high school grades to determine placement in these new courses. That approach allows students to begin credit-bearing courses upon enrollment with additional supports provided to meet academic needs.

A key element of each of these models is intensive student supports. Scaling and sustaining student success strategies can be a significant challenge, especially considering constrained resources and the many demands put on colleges. Community college advisors can have up to 1,000 students on their caseloads, so the large-scale provision of high-touch services to students would be cost prohibitive. Four-year colleges, especially large public institutions, face similar budgetary challenges.⁸ Expanding an intervention that has been tested at a small scale rarely means replicating it. Instead, an institution needs to identify what pieces can and should be adopted more broadly, how to implement the new approach within constrained budgets and institutional contexts, and how to affect broader institutional and cultural change for wide adoption.

Leverage Technology to Help Students Stay the Course

In recent years, a number of open-access institutions have leveraged online platforms and predictive analytics to offer cost-effective support services—including academic, financial, social, and personal support—at scale. One example is Georgia State University’s use of predictive data analytics, which forecast student needs in advising, course scheduling, financial stability, and wellness to increase options for working students.⁹ Similarly, the Bill and Melinda Gates Foundation developed a technological solution for delivering support services through Integrated Planning and Advising for Student Success, which helps students navigate the path to a certificate or degree by combining advising, degree planning, alerts, and interventions.¹⁰ The tool draws on predictive analytics to help counselors and academic advisors determine in advance whether a student is at risk of dropping out or failing. It can also help students with course selection.

With the growth of online postsecondary programs, the question of how support services are provided to students participating in these programs is also key. Lone Star College, a community college in Texas, has developed Lone Star College Online,¹¹ which provides academic advising, registration services, and tutoring online for students. Students have access to an advisor seven days a week, and case management is available for students who are enrolling for the first time in college. The program has seen early indications of success,¹² with service provision contributing positively to student satisfaction and completion rates.

As the development of these support strategies is still nascent, much remains to be learned about how to leverage technology effectively, where in-person supports are needed, whether these approaches are effective, and which approaches work best for different groups of students. An additional question is how to provide students enrolled in online courses with other supports, like child care assistance, mental health counseling, or help dealing with material hardships like hunger.

Solution Set 2: Provide Alternative Models of Learning and Credentialing

Recognizing the diverse needs of students and providing high-quality options that allow them to participate in education and develop skills in ways that are integrated into their complex lives is essential to their success both in school and employment. New approaches underway to enhance and develop alternatives to semester- and degree-based learning and credentialing include competency-based education (CBE), work-based learning, online learning, and career pathway programs. These efforts aim to provide new ways for students to learn and communicate to employers what they know and can do, but they require more research and alignment into a cohesive system of lifelong learning, as well as policy and systems changes to support them.

Expand Quality CBE Models

Competency-based education models also allow for flexibly paced learning and aim to better align what students learn in school with what is required to be successful in the labor market. CBE is a common element of some work-based learning and online education programs.¹³ CBE models require alternative methods of assessment and validation, including prior learning assessment,¹⁴ new methods of organizing information on available programs and credentials, and new mechanisms for communicating what students have learned. Proponents of CBE argue that the model allows for flexibility for disadvantaged or underserved students—especially adult learners looking to advance their skills, who are more likely to have complex schedules as they balance work, school, and family responsibilities.¹⁵ It also provides multiple pathways to master competencies (e.g., on the job, in the community, or in the classroom); sometimes the outcome is a college degree, and other times it is an alternative credential. The goal is not only to better align what people learn with what they need to succeed in the labor market, but to allow students and workers to acquire the skills they need more quickly so they do not waste time or resources by accumulating excess credits, taking more time than necessary, or dropping out when programs do not meet their needs.

Competency-based education models have been debated since the 1970s as an approach to vocational and career-focused education programs (Gervais 2016), but they have reemerged in recent years in response to calls for greater accountability for student learning, concerns about student debt, and efforts to better meet the needs of adult learners. Adoption of CBE models has been more prevalent in certain occupational areas, such as medicine and the trades, but CBE models have yet to be adopted widely by institutions of higher education. According to a 2018 survey by the American Institutes for Research, key barriers to implementation of CBE models by higher education institutions include regulatory barriers, particularly rules that link student aid to credit attainment; institutional business processes that get in the way of change; and the costs associated with program start-up (AIR and Eduventures, n.d.). Given these barriers, CBE models sometimes find a home outside traditional higher education in community-based or online programs. Another barrier to adoption for both college and nonprofit providers is that employers, students, and families may see competency-based credentials as holding less value than traditional college degrees, potentially exacerbating inequities if they are pushed as an option for nontraditional students only.

Institutions adopting CBE models range from large state systems to individual community and technical colleges, as well as some community-based programs. The University of Wisconsin's Flexible Option, for example, offers "a more personalized, convenient, and affordable way for adults and other nontraditional students to earn a University of Wisconsin degree or certificate."¹⁶ Salt Lake Community College, through a grant from the US Department of Labor, is exploring the expansion of CBE across disciplines.¹⁷ In both examples, CBE is not replacing traditional educational options, but is offered as an additional choice that meets the needs of certain students.

Expand Work-Based Learning to Reach New Populations and Sectors

Work-based learning strategies give people the opportunity to learn in a work setting with the goal of building the skills needed for entry or advancement in a particular career (Cahill 2016). Work-based learning can take many forms, such as internships, externships, and apprenticeships.¹⁸ This type of learning provides students and workers the chance to get exposure to an industry, gain valuable work experience, expand professional networks, and apply academic and technical skills in a real-world setting, often while receiving a wage or stipend. Work-based learning participants can also develop "soft skills," such as communication and critical thinking.

Work-based learning is an established approach, and some models have strong evidence of effectiveness. Apprenticeship, in particular—involving a combination of classroom and on-the-job

training linked to achievement of competencies—has seen a high ROI for apprentices (Lerman 2018). Less is known about other forms of work-based learning (e.g., internships, externships, and co-op education) that are being expanded as part of postsecondary education programs. In a study of efforts to expand employer partnerships in community college settings, Scott and colleagues (2018) find that internships and on-campus simulations of work settings are the most common types of work-based learning. Many unanswered questions remain about the impacts of these approaches, the structure and intensity level that make the most difference, and the best ways to engage employers.

“Differences in students, industries, and local contexts have an impact on work-based learning and other alternative models of education and training. We really need to understand patterning in the labor market as it changes and how different students fare in these alternative models.”

—*Chauncy Lennon, Lumina Foundation*

In addition to exploring new forms of work-based learning, there is a need to expand work-based learning to reach new geographies and populations and to connect with additional occupations and industry sectors. Some states are leading efforts to expand apprenticeships. South Carolina launched Apprenticeship Carolina in 2007 to expand apprenticeship through tax incentives, marketing the program to employers, and technical assistance for apprentice sponsors. This effort increased registered apprentices in the state from 415 in 2007 to nearly 3,000 in 2016 (Kuehn 2017). Kentucky, with support from the US Department of Labor, is engaged in increasing the number and diversity of apprentices, and in expanding into new sectors, including increasing apprenticeship opportunities in the public sector (*The Lane Report* 2018).¹⁹

Across the country, expansion into traditionally nontrade sectors includes such fields as education, health care, and manufacturing, and such occupations as computer scientists, information technicians, and engineers (Kuehn 2019; Kuehn and Jones 2018; Lerman, Eyster, and Kuehn 2014; Task Force 2018). Targeted efforts—such as those led by Jobs for the Future as part of its Center for Apprenticeship and Work-Based Learning—are under way to reach populations that have been underrepresented in apprenticeship programs or have faced barriers to successful completion (Toglia 2017). Apprenticeships in the justice system have also grown in recent years, tripling between 2000 and

2016 and helping people leaving prison successfully transition into the labor market (Hecker and Kuehn 2019). Although these examples of expansion are promising, we don't know enough about the barriers of expansion to new geographies, sectors, and populations, and how to overcome these barriers.

Expand Access through Online Programs while Ensuring Equity

Online learning offers working adults the opportunity to access education and skill-building on their own schedule and pace, often working toward the mastery of competencies. Programs can be fully online or offered in hybrid form with a combination of online and classroom-based learning. For colleges, fully online programs can be delivered at lower costs than traditional programs.

In 2016, 31.6 percent of college students took at least one distance education course (Seaman, Allen, and Seaman 2018). More students are participating in online programs or taking online courses, reflecting an increase in both demand, because students see benefits in these programs, and supply, because colleges see benefits in offering these options, whether the advantage is remaining competitive in the marketplace or lowering costs.

Both fully online and hybrid programs have grown in recent years. Fully online programming is available at a range of institutions, including private for-profit institutions, like Capella University, and nonprofit institutions, such as Southern New Hampshire University. These institutions have rapidly expanded their online degree programs: Southern New Hampshire has gone from 2,500 students in campus-based programs to 90,000 students in mostly online programs over the past decade and a half. Through its College for America program, the university partners with employers to provide competency-based, incumbent worker upskilling. The biggest growth in recent years has been in online and hybrid programs offered by public institutions. The majority of students enrolling in online programs or courses in 2016 did so at public institutions (Seaman, Allen, and Seaman 2018).

Online programs have become important players in higher education. However, some research suggests that outcomes are worse for students in fully online programs and that hybrid programs yield stronger results (Alpert, Couch, and Harmon 2016; US Department of Education 2010). There has also been concern about predatory practices—attracting students to low-value programs that result in students exhausting financial aid or accumulating significant debt without the skills or credible credentials to secure employment to be able to repay the debt. Protopsaltis and Baum (2019) argue that online education has failed to deliver on its promise and exacerbates inequities across socioeconomic groups. A key concern in online programs is lower faculty-student interactions, which are an essential element of high-quality programs.

Given the expansive growth of online learning and student demand, the key question is not whether online learning should exist. Rather, the questions are how to identify—and then ensure—the essential elements of quality in online learning, in what fields of study is online learning most effective, and how to design programs to meet different student needs, especially those of underserved students,

Improve Career Pathway Programs to Support Advancement

Career pathway programs have gained traction in recent years as a strategy to help those who might not be served well by college programs develop skills, earn credentials, and secure employment in high-demand occupations (Eyster and Gebrekristos 2018). Career pathway programs are defined by the US Department of Health and Human Services as providing “post-secondary education and training that is organized as a series of manageable steps leading to successively higher credentials and employment opportunities in growing occupations.”²⁰ Such programs give students the chance to earn credentials for entry-level positions, find jobs related to those credentials, earn additional training and credentials, and advance into higher paid employment. These credentials are often “stackable” so they can provide opportunities to earn credits toward degrees, and they can involve CBE models, comprehensive supports, and elements of guided pathways. In a lifelong learning system, career pathway programs allow workers to participate in shorter-term training that yields credentials valued in the labor market while offering future opportunities to further develop skills, gain credentials, and advance in a career.

Research on career pathway programs has primarily focused on the first rung of a career ladder, with limited research to understand efforts to help students get beyond those initial steps and evidence on career pathway advancement (Bragg et al. 2017; Eyster, forthcoming; Schwartz, Strawn, and Sarna 2018). Yet a recent synthesis of 128 programs showed that all offered multiple steps to help people advance (Sarna and Strawn 2018).

Leading practitioners in many different sectors are using many different strategies to promote advancement within career pathway models (Eyster and Gebrekristos 2019). Instituto del Progreso Latino embeds advancement within its Carreras en Salud (Careers in Health) program, helping students, especially graduates of the Basic Nursing Assistant programs, work toward an associate degree. Other programs, like Generation’s Retail Career Advancement Program, focus on advancement by building the skills of entry-level frontline workers and helping them develop credentials. Wayne State University seeks to reengage students who have dropped out of college with its Warrior Way Back program, which targets students who did not finish their programs of study, owe minimal debt to the university, and need three or fewer semesters to graduate. Warrior Way Back supports students as they complete

remaining coursework and forgives \$500 of debt per semester when students complete successfully. Further research is needed to understand these career pathways advancement strategies.

Solution Set 3: Increase Employer Investments in Skill Building and Better Align Employment and Postsecondary Education

Employers invest in the workforce in various ways: by creating good jobs with family-sustaining wages, by providing supports that help people be successful on the job, and by offering resources and putting in place policies that support training. A reimagined system of postsecondary education requires that employers invest in the education and training of the workforce both directly with their own employees and through involvement in the design and delivery of postsecondary education and training programs. It also requires better information on skills so that postsecondary institutions can adapt to changing labor market needs and build stronger connections to industry. The future labor market will demand stronger connections between employers and skill-building programs and greater transparency about these investments to ensure that workers, postsecondary institutions, government, tax payers, and businesses are targeting resources in ways that help workers, businesses, and economies thrive.

Support Employer-Led Advancement Strategies for Incumbent Entry-Level Workers

Several studies have showed that the amount employers spend on training dwarfs the size of public-sector spending on training (Mikelson and Nightingale 2004). For a long time, unions, especially in trade sectors, would negotiate with employers to offer education and training funds to help their members develop skills and keep their skills up to date, but declines in unionization have shifted the landscape.²¹ There is also a widespread perception that employers are offering less training—for fear of investing in workers that might leave or because of reduced funding for human resource departments (Capelli 2012). However, we lack good sources of information for understanding the nature and level of employer investments, and the available evidence of declining spending on incumbent worker training paints a mixed picture (Lerman 2016).

At the same time, several major employers are reimagining their roles in supporting the advancement of their workforce, often partnering with colleges or other training providers. In 2018, Walmart announced partnerships with three universities to offer associate and bachelor's degrees at low cost to workers. Amazon, through its Career Choice program,²² supports the company's hourly

workforce with the goal of helping workers advance outside the company. It provides robust tuition support for training in a high-demand field of study and on-site classrooms to make courses accessible for associates. Google, facing difficulty finding IT workers, developed its own training program, which was offered on Coursera and then brought to 25 community colleges and to other business looking to hire IT workers.²³

“It was a challenge for us to find candidates for IT support roles with the specific technical knowledge and skills that we needed at Google. So we partnered with the nonprofit organization Year Up to create a program aimed at training and hiring nontraditional talent for IT support internships and full-time roles. Later this internal program became the basis of the IT support professional certificate that is now available to anyone, anywhere, as part of the Grow with Google initiative. Once people complete the certificate, they can opt in to share their information directly with top employers, including Bank of America, Walmart, Sprint, GE Digital, PNC Bank, Infosys, TEKsystems, UPMC, all who are looking to hire IT support talent. Making sure other companies were on board and recognized the certificate from the outset was essential for us.”

—Kate Sheerin, Google Public Policy

Regional efforts are also under way. In Washington DC, the Greater Washington Partnership, a business-led economic development collaborative, recently launched Capital CoLab (Collaborative Leaders in Academia and Business), a joint effort of local colleges and business leaders to develop an IT certificate for undergraduate students at participating colleges. This credential includes preparing students in such areas as data analytics, visualization, and cybersecurity, using competencies defined by employers across multiple industries.²⁴

These efforts represent new ground; in the past, entry-level workers often did not qualify for the same tuition benefits or training opportunities as midlevel employees, or such benefits were hard to access. If many foundational skills needed for the workplace are built in entry-level jobs, there is a need to reimagine employers as developers of those skills and to make the postsecondary education and workforce systems complement those efforts. How can the education and training and workforce

systems, along with industry partnerships, support employers? This question is especially pertinent to small employers that may not have the resources to dedicate to employee skill-building. Figuring out what strategies are most effective, how employers can partner with training providers, and how to support advancement for all workers—whether at small firms or large, prominent companies—will be essential in a future labor market.

“Our aim is to help associates pursue their passions and their career goals, whether that means a career at Amazon or somewhere else.”

—*Juan Garcia, Deloitte Consulting LLC (formerly at Amazon)*

Establish a Common Language on Skills and Competencies among Education and Training Providers, Employers, and Students

A system of postsecondary education and training that supports all workers in developing the skills needed for a changing labor market requires a common understanding of skill needs among employers, students, workers, and education and training providers. Institutions of higher education and workforce development need to understand the most effective ways to engage with employers, including information on the jobs and skills demanded by industry and on recruitment and hiring practices (Spaulding and Martin-Caughey 2015). A mutual challenge is that job descriptions do not always reflect the skills needed for jobs, making it hard for job seekers and postsecondary institutions to build the right skills (Capelli 2012; US Chamber of Commerce Foundation 2017).

Local workforce development systems often help identify the local skill needs of businesses and bridging the gap between the skills employers demand and those being developed in education and training programs. Over the past two decades, industry partnerships between educational institutions and employers have attempted to improve alignment between postsecondary education and industry. National efforts like the National Fund for Workforce Solutions and the US Chamber of Commerce Foundation’s Talent Pipeline Management model lend support in this area to state and city leaders in higher education, workforce development, and economic development.²⁵ Nonetheless, a divide remains.

Technology plays an increasingly important role in our understanding and cataloguing of the demand and supply of skills. State and local governments are using online data-scraping technologies—such as Burning Glass and Geographic Solutions—that scan job postings and online résumés to see if

the skills of workers align with available jobs. Credential Engine uses a cloud-based registry to organize and make publicly available to students, employers, and institutions all types of credentials, from licenses to PhDs.

The gap in information and common language also affects hiring practices. Potential applicants are often unsure if they qualify for a job, and employers have trouble discerning the value of different types of credentials. At the same time education and training providers are experimenting with CBE models, employers are expanding and experimenting with different approaches to competency- and skills-based hiring. For instance, the Markle Foundation is focused on creating a skill-based labor market in which workers are evaluated and hired based on their skills, not just the credentials and degrees they have earned. Through its Skillful initiative, Markle is spearheading intensive efforts in Colorado and Indiana to transform how workers are educated and trained and to encourage employers to hire for talent. Similarly, Innovate+Educate works nationally to expand CBE and competency-based hiring across industries to open up opportunities for workers and ensure that employers have the talent they need.²⁶

Efforts to catalogue credentials, strengthen relationships between employers and educational and training providers, and change hiring practices are important strategies for bridging the gaps between postsecondary programs and employers and between job seekers and employers. It is unclear whether these efforts will lower barriers to workforce entry or create new hurdles for disadvantaged job seekers because they are tracked to credentials that employers value less or because they add extra qualifications for jobs. Some employers may be reluctant to replace the college degree qualification with skill requirements because they use the degree as a proxy for other sought-after qualifications—persistence, reliability, teamwork—that are difficult to assess (Fuller and Raman 2017). But there are lessons to be learned about refining these strategies, determining whether they address the information gap, and expanding them to reach more colleges, nonprofit training providers, and those in the public workforce system trying to assess issues of supply and demand for jobs and skills.

Solution Set 4: Expand Financing for Education and Training to Better Deliver Affordable High-Quality Opportunities for Students

State and local appropriations to institutions and federal aid (grants and loans) to students are the backbone of the higher education financing system. But public funding has not kept pace with rising college enrollment, increasing the prices faced by students (Akers and Chingos 2016, chapter 3). State

and local subsidies primarily support students who attend public institutions in their state of residence. Federal aid, which relies heavily on student loans and is limited by number of credit hours and other regulations that govern institutions' eligibility, leaves large financing gaps for many students.

Existing funding mechanisms need to be strengthened to better support student success, and they need to be expanded to accommodate new models of learning and credentialing, whether in a traditional institution, training program, or employer-based program. New approaches to distributing the risks and costs of education should incentivize institutions, funding systems, students, and businesses to invest in quality education, diminishing current problems with student debt.

“There’s a pervasive idea in federal higher education policy that the only way to innovate is to unleash student aid with poor accountability. It’s time to break the constant swing of the pendulum from rampant abuse in the higher education sector to overly restrictive accountability that stifles innovation.”

—*James Kvaal, The Institute for College Access and Success*

Increase Public Investments to Make College More Affordable

There is a clear need to strengthen federal funding, such as the Pell grant program, and state grant programs for postsecondary students. But funding to institutions also matters. A recent study found that increased spending by colleges had much larger impacts on outcomes such as completion rates than across-the-board tuition reductions (Deming and Walters 2017). Increasing the quality of education can make college more affordable by enabling students to finish their degrees faster (and therefore with less debt) and to find greater success in the labor market.²⁷

State budgets for higher education have been squeezed by increasing student enrollments and budgetary pressures for other spending, especially from rising Medicaid costs (Webber 2018). Federal policymakers are increasingly interested in shifting from the current model, in which nearly all funding flows to students, to a model in which some support flows to states or directly to institutions—typically public colleges and universities—through a federal-state partnership.²⁸

The goal of such a partnership would be to provide new federal funding for higher education that leads states to increase their levels of commitment, reversing the cuts that many states have made and

allowing funding to keep up with enrollment growth. The design of such a program would have to ensure that federal funds would supplement state funds rather than replacing them. Because such a program would be voluntary, the federal government would need strategies to avoid penalizing students who live in states that do not participate in the partnership.²⁹

A growing list of states, including Tennessee, Rhode Island, and New York, as well as localities such as Compton, California, and Flint, Michigan, are moving on their own to relieve the student burden of paying tuition. They have created College Promise programs, which pledge to pay the tuition and fees not covered by other grant aid for students in community college degree and certificate programs.³⁰ Experimentation with College Promise programs nationwide will be most valuable if it produces evidence about how best to design these programs, including whether they provide new funding for low-income students (for whom community college is often already free due to Pell grants) and how they affect institutional funding levels and quality.

Experiment with Mechanisms to Increase Private Financing as a Supplement to Public Support

Given that increased public support may not be forthcoming, and because federal and state funds are typically limited to established providers, private capital might effectively supplement public funding for students. One such approach, income-share agreements (ISAs), allows students to receive financial support for education in exchange for a promise to pay a certain percentage of their future income for a set period. Whether ISAs can serve more than a trivial number of students and help close equity gaps is still an open question, but one we think is worth exploring.

Like income-based repayment of federal loans, ISAs protect students against unexpectedly low postcollege incomes. Students are not required to make payments until their incomes reach a specified level, so inability to pay need not lead to default. Private student loans do not carry the same protections, and ISAs are often viewed principally as an alternative to private loans.

For example, Purdue University's Back a Boiler ISA is available to sophomores, juniors, and seniors.³¹ Students pay a share of their income back to Purdue for about 10 years, with the percentage of income paid tied to the amount of funding provided and the student's field of study (the percentage is lower for fields that tend to lead to high salaries). The ISA model is also a potential solution to financing postsecondary credentials not eligible for federal grants and loans, such as coding boot camps.³²

In the standard ISA model, investments are made on strictly business terms. It is unclear whether this model will largely serve students from relatively advantaged backgrounds going into fields with strong earning potential, exacerbating existing inequalities. There are also open questions on the appropriate regulatory frameworks to protect students from potentially predatory ISA providers. Further experimentation and evaluation is necessary to understand who will be served, and how well.

An alternative model is the provision of ISAs through nonprofit social impact funds that partner with organizations providing support services to disadvantaged students. The leading example of this approach is Better Future Forward, a nonprofit ISA provider that partners with college coaching programs, such as College Possible.³³ More data are needed, but partnerships like this could represent a model for raising private capital to fund interventions (similar to the CUNY ASAP model) as a way to supplement insufficient levels of public support. They may also be the best test case of whether ISAs will primarily serve advantaged students pursuing lucrative careers or whether they can help close equity gaps by connecting disadvantaged students to high-quality postsecondary pathways.

Solution Set 5: Empower Students to Make Informed Decisions about Whether and Where to Seek Postsecondary Education or Training

Students need accurate and useful information when deciding something as important and expensive as their education. Until recently, little information was available to help them decide whether a program of study was worth their time and money. Colleges reported graduation rates annually to the federal government, but only for full-time students first enrolling in college—a small fraction of the students at many institutions. The reported information also failed to capture differences in value between degrees from different institutions—or even different majors at the same institution—which do not always have equal value in the labor market.

There has also been a lack of information on shorter-term programs. Little material is available on noncredit programs that operate outside many institutional and governmental systems of accountability (Davaasambuu et al. 2019). Although the public workforce system has tried to increase transparency and quality through Eligible Training Provider Lists maintained by states and approved under federal law, many short-term programs are not included, and states face challenges in maintaining these lists (Selzer and Eyster 2015).

As a result, potential students in both college and shorter-term programs have had to make decisions largely based on reputation, advertisements, and campus visits. And colleges have faced incentives to compete in ways that increase costs rather than providing a higher-quality education at a lower price.

This void has begun to be filled by a mix of public and private actors. Beginning in 2015, the federal government began reporting the earnings of former students for most colleges in the country through the College Scorecard. And a number of states, such as Virginia, report earnings at the program level (e.g., economics majors at a particular college) for former students who remain in the same state.

The private sector has also contributed to these efforts. For example, PayScale.com reports the average salaries of a subset of the graduates of many colleges, as well as other information (such as top employers) based on self-reported information visitors provide to its website.³⁴ Credential Engine aims to make information on credentials more transparent and to create a common language to describe credentials and skills.

These efforts have not realized their full potential, owing to limitations in both the accuracy and usefulness of the consumer information produced, and because some efforts are still nascent. Accurately measuring program quality is very difficult, as outcomes such as completion rates and earnings are also affected by student characteristics, including academic preparation and family resources.

Even if accurate information can be produced, it may not benefit all students. Many students live within commuting distance of a single institution and thus are unlikely to use data to shop for colleges (Blagg and Chingos 2016). Experiments with providing new types of college data, such as the earnings of former students, have been met with limited interest by high schools and students (Blagg et al. 2017). Some students might need additional support and guidance to best use the information.

In short, significant knowledge gaps around the creation and communication of consumer information in postsecondary education remain, preventing this solution set from empowering students to make informed decisions. Improving the quality and perceived usefulness of the information available and facilitating meaningful access to that information for at-risk students are critical to improving postsecondary outcomes. The ultimate goal is for good information to improve student choices. Much work remains to develop the best strategies for accomplishing this vital task.

Building Knowledge Changemakers Need

The efforts and innovations highlighted in this brief have yielded exciting lessons and emerging evidence about what works in postsecondary education and training. These developments point to the need for new research to understand how to identify and institutionalize effective practices and support broader implementation. We emphasize understanding the effects of new approaches on a broad spectrum of students before widespread implementation. Untested approaches, especially those harnessing technology, are being implemented rapidly. Research is needed not only to understand what works but also to ensure that those students most vulnerable to unbridled experimentation benefit from these efforts and are not subject to disproportionate risks. Additional information and data are needed to understand employer investments, hold education and training providers and government accountable, and give students and workers the information they need to navigate a complex postsecondary education and training system and future labor market.

Drawing on interviews and a roundtable conversation with a broad array of changemakers, we identified five priorities for knowledge-building that would help accelerate solutions to prepare for the profound changes anticipated in the labor market:

1. Facilitate scaling of student and worker success strategies.
2. Evaluate alternative postsecondary education and training models to support adoption of effective approaches for traditionally underserved populations.
3. Assess and document employer skill needs and investments to support quality postsecondary programs and strategies.
4. Develop better measures of ROI of postsecondary programs to inform consumers and guide public and private investments.
5. Create the conditions for responsible private financing to supplement public support for postsecondary education and training.

These knowledge-building priorities do not aim to address every pertinent question about postsecondary education in the United States. Instead, they seek to fill critical gaps from the perspective of policymakers, practitioners, advocates, and philanthropists working to advance solutions. Each priority is discussed below, with a focus on how new data, analytic tools, and evidence

could help accelerate solutions to ensure quality, affordable postsecondary education and training for a broad range of nontraditional and disadvantaged students.

Priority 1: Advance Knowledge to Facilitate Scaling of Effective Postsecondary Education and Training Strategies

Investments in community college and career-focused programs over the past several decades have helped identify and produce evidence for promising approaches that could reduce student costs and time to completion and improve persistence, completion, and credential attainment (Scrivener et al. 2015). Research has pointed to the importance of creating clear pathways that help students set goals, understand the steps they need to reach them, make progress, and receive support along the way (Bailey, Jagers, and Jenkins 2015). Other training providers, such as community-based organizations, have provided evidence of approaches that are strongly linked to industry and include robust supports (Maguire et al. 2010). Apprenticeships have shown strong positive effects on employment outcomes for participants (Reed et al. 2011).

In many cases, evidence of effectiveness has emerged from comprehensive “boutique” or demonstration programs that aim to address the totality of student needs and are, consequently, costly. Because funding for these pilot or demonstration efforts is typically not ongoing, these innovative efforts are also often funded by philanthropy and involve a subset of students, meaning that approaches may need to be modified and costs reduced to serve many students at scale. Apprenticeship has not gained wide traction, despite the body of evidence showing its value. It remains concentrated in certain geographic areas and industries, and women and people of color are still underrepresented in these programs or face challenges with completion.

For evidence-based models in colleges and other training programs, the issue is how to replicate results at scale or in other contexts. In the case of colleges, changemakers noted the challenge of innovating in established bureaucracies and constrained resources. Increasingly diverse student bodies accentuate the importance of determining how to target services to those students most in need. Research has started to examine different approaches to providing students with academic, career, and personal supports. More information is needed to understand which supports are most important, how they can best be delivered, when they are needed, and what supports different students need (Sullivan et al. 2018). Big data and technological interventions may make it possible to more effectively target

supports to the right students when they need them most, but the evidence on these approaches is limited.

There is also limited knowledge about students' motivations and decisionmaking processes as they navigate college and careers. A recent report by Strada and Gallup (2018) notes that getting a good job is cited as the primary motivator for enrolling in any type of postsecondary education and training program. Less clear is how students make decisions along the way, including their progress in and out of college and through different types of training.

“We’ve seen an explosion of organizations piloting innovative education and training strategies... There are so many technological platforms out there connecting people, but what we’re missing is an overarching marketplace that brings all of the players together. Research can help guide us beyond the pilot phase to realize these innovations at scale.”

—Jamai Blivin, Innovate+Educate

Applying Knowledge to Accelerate Solutions

Colleges, particularly community colleges, are at a critical moment: several large federal and philanthropic investments in institutional reform have ended. To sustain and continue the progress that has been made and help institutions target scarce resources will require a better understanding of what elements of comprehensive models make a difference and for whom. An improved understanding of the institutional contexts in which these strategies would be implemented would ensure that research results are actionable and could be used as tools for making systemic change. New strategies and models that leverage technology in providing comprehensive supports need to be tested so leaders, particularly those at underresourced institutions that lack funding for experimentation, can avoid spending money on costly products that lack evidence of effectiveness.

State governments would also benefit from research to understand how to effectively and efficiently implement support strategies at scale. States have a primary role to play in the financing of public higher education and holding institutions accountable for results. They can also support institutional policy changes around enrollment, curriculum development, credits awarded, transfer and

matriculation, and so on, to change systems around serving students. State governments need information on cost-effective models and strategies that can be realistically integrated and institutionalized within public colleges and universities and on the policies needed to support these models.

Similarly, apprenticeship is at a crossroads, with bipartisan support and resources dedicated to expansion. Federal and state governments and local workforce systems need information that would support the expansion of apprenticeships. Colleges, a critical partner in apprenticeships and other forms of work-based learning, need information on how to expand effective models and support student success.

Approaches to Knowledge-Building

Additional evaluative research is needed on proven interventions to understand what components are most important, which approaches work better for different kinds of students and workers, and whether adaptations of successful models can be implemented at scale and achieve the same results. For example, some promising programs have comprehensive services but require a full-time load. Understanding the extent to which being in school full time is critical for positive outcomes is important. Scaling this type of program may be difficult in circumstances where a large proportion of the student body is also working full time. Adaptations that work may be possible.

Continued rigorous studies employing experimental and quasi-experimental designs can be used to test elements of models. Robust implementation research to understand the institutional contexts of interventions is also key. New evaluative work would allow the assessment of modifications to strategies necessary for scaling, including evaluation of technology-enhanced strategies such as predictive analytics and e-mentoring for college programs. Cost-benefit and ROI studies would provide college administrators, educators, and state administrators and other funders the information to make the case for broad institutional change.

To better understand how students and workers make decisions as they navigate their postsecondary experiences and to design more effective models, studies should include in-depth qualitative research or participatory research that provides the student perspective. How much does providing labor market information alone impact behavior compared with pairing information with advisor meetings or visits to employers? Such research would provide insights into the design of programs, including those involving guided pathways, online programs, and programs offered by trade unions or community-based organizations. It will be important to conduct focused analyses to understand the experiences and characteristics of different subgroups (such as first-generation college students, community college students, and older adults returning to school) and people participating in

different program types (such as people participating in registered apprenticeships and other kinds of work-based learning and people pursuing careers with different types of credentials or degrees).

This research should be linked to the development of resources to support leaders in implementing systemic change or replicating effective models or approaches across organizations. In-depth implementation research with a focus on institutional context would provide the insights necessary to develop tools that can support these efforts.

Priority 2: Evaluate Alternative Postsecondary Education Models to Support Adoption of Effective Approaches for Underserved Populations

A changing student body and labor market has led to experimentation with different approaches for improving college and career outcomes. Strategies such as online learning, CBE models, and career pathways aim to meet the needs of today's students and employers for a skilled workforce, reduce costs, and allow for learning throughout someone's working life. Yet these and other models are largely untested, and existing metrics are inadequate for measuring the quality of these efforts.

Much of the research on online learning tends to examine the online platform as a whole, not accounting sufficiently for the variation in program goals, structures, and enrollees. Some evidence indicates that outcomes are worse for students in fully online programs than those that are classroom based and that students who are most disadvantaged fare the worst (Protopsaltis and Baum 2019). Yet the number of students participating in such programs continues to increase. Can student-faculty interaction, which research suggests is important, be facilitated online? We know student supports are key, and although there is evidence that technology can be used to target supports in online platforms, evidence on effective models is still needed. Several studies and industry surveys have examined employer perceptions of online degrees and concluded that employers view candidates' online degrees as inferior to degrees obtained through traditional instruction (Protopsaltis and Baum 2019). However, some of this research is outdated, and questions about variation in employer perceptions are unanswered.

Research on CBE models is also limited. It is especially important that we understand how traditionally underserved students, including nontraditional students, fare in both CBE and online programs. Changemakers noted the particular knowledge gap in effective forms of assessment. For

career pathway programs, there is a need to understand advancement efforts and related outcomes for students, including the variation across different types of advancement models.

“Before we are scaling things, we want to know if anything we’re doing is truly working, especially for students of color. “

—Eshuana Smith, Urban Alliance

Applying Knowledge to Accelerate Solutions

Research to understand the effectiveness of emerging models and their impacts on disadvantaged and underserved students would help stakeholders at every level of the postsecondary education and training system. At the federal and state levels, such information would help guide investments in expansion and scaling and would help identify opportunities to further test nascent approaches. Stakeholders also need information on experimental models to design policies that support these efforts while protecting students and allowing for innovation to occur. This research could inform postsecondary educators and training providers as they search to meet their goals for students while controlling costs. Stronger evidence on career pathway advancement would facilitate broader integration of these strategies into postsecondary education and training systems and into employer practices as well.

Approaches to Knowledge-Building

Rigorous evaluations of CBE models, online learning, career pathways, and other innovative strategies are needed to fill the knowledge gaps around postsecondary education approaches. Research must examine the outcomes and impacts, and it must assess how effectively the programs serve low-income students, students of color, and older students upgrading their skills. In the case of CBE and career pathway models, the barriers to adoption are often the policies, culture, structures, and norms governing higher education, as well as the challenge of assessment. Rigorous implementation studies will be critical to understanding the contexts and challenges institutions face in adopting these models and the policies and systems changes required to be successful. Studies that focus on different assessment approaches and models would help colleges and other training providers identify and adopt

effective approaches. Evaluations of career pathway programs must be able to track students beyond just a few years to capture longer-term outcomes.

We also need more qualitative research to understand the student experience and perspective. Surveys of students in online programs exist, but we do not know about the motivations of people who choose to enroll in online programs. We also understand little about how students make decisions about career advancement. We also need to understand more about participants' experiences in these programs—gaining perspectives on programs with both strong and weak student outcomes. National survey data combined with in-depth interviews could yield insights on what motivates different groups of students (e.g., older versus traditional college age) to participate in online programs, their experience within those programs, and how they make progress.

Although surveys and research have looked at employer perceptions, updated survey research might uncover differences across occupations, sectors, and skill-building activities. Paired with interview studies focused on supporting low-wage worker advancement in particular sectors, we could better answer questions about which online and competency-based programs are the best fit for students and how to communicate to employers what students learn.

Priority 3: Document and Assess Employer Skill Needs and Investments to Support Quality Postsecondary Programs

Employers need skilled workers to thrive, and many employers perceive that this need is not being met. Better preparing workers to meet these needs will benefit employers and job seekers. One gap in our knowledge is the role employers can play in making sure we have a properly prepared skilled workforce and the most effective ways that educational institutions, state and local governments, nonprofit organizations, public workforce and economic development agencies, and philanthropists can work with employers to reach this goal. Information on employer investments in training is particularly lacking since the discontinuation of Bureau of Labor Statistics's Survey of Employer Provided Training in 1995. In the face of changing labor market needs, a gap faced by local area leaders is how to improve the skill levels of current residents, particularly those without postsecondary education or in jobs with declining demand, to fill the skill needs of today and tomorrow. Effective ways employers can participate in or take on these efforts are also needed.

Several studies have documented the important role employers play in career-focused programs (Barnow and Spaulding 2016). Efforts like the Aspen Institute's Upskill America aim to promote employer investments in training by highlighting promising practices and providing tools that employers can use. Yet changemakers highlighted understanding employers' needs, investments, and priorities as the most important and most difficult area of knowledge-building. Potential partner organizations don't always "speak the right language" or have the in-depth knowledge of the industry structure to carry out fruitful conversations and work on joint solutions. Labor markets and employer needs are changing, so information and solutions need to be dynamic. Furthermore, employers are in competition for workers and often do not want to "reveal their secret sauce," in the words of one changemaker. They may find assessing what works and sharing those findings risky to their bottom line, making it difficult to get independent assessments of different approaches.

Efforts like the US Chamber of Commerce Foundation's Talent Pipeline Management model are business-led initiatives to support employers in building the supply of skilled labor, in the community and through upskilling incumbent workers. We need to know more about the extent to which businesses are taking up the approaches developed by these efforts. In local labor markets, leaders in economic development, education, and workforce development need to understand specific needs for skilled labor and assess whether the programs offered by postsecondary institutions are aligned with industry needs. State and local governments are increasingly relying on technology to assess supply and demand, but additional ways are needed for helping those on the ground understand these issues.

"We do a lot of shiny object chasing, but in order to scale effective employer practices, we need more information about what works."

—Bridget Burns, University Innovation Alliance

In addition, there are communication gaps between employers and potential employees about what skills workers have. Job descriptions are not always clear about what skills are needed, and résumés may not clearly signal worker skills. Public workforce programs and other skill-training programs emphasize the value of students gaining "employer and industry-recognized credentials," but this is not always the case; some credentials may not be valued by employers, or employers may not understand the acquired skills represented by the credential. Efforts like Credential Engine and competency-based résumés represent important strategies for addressing these translation issues, but more research is

needed about employer perspectives on whether different approaches are working and how they can be improved.

Applying Knowledge to Accelerate Solutions

With better understanding of effective models, employers seeking to maximize investments in resources could learn what approaches are most effective and understand where there might be disconnects between posted qualifications, actual job requirements, and workers' skills. Research on the returns to training investments might help employers not only invest more on training but also spend resources in ways that make sense. Employers would also have resources to help guide collaborative efforts to address sector-wide and regional skill issues.

With better information on the skills demanded by employers by sector, as well as employer perspectives on worker training, educators would be able to design programs that would prepare students for the labor market and know how to support students in accessing and being successful in jobs. Local leaders and administrators of workforce programs and funding would be better positioned to target resources for in-demand training and to identify opportunities for employer partnership and investment. Such information would also help state and local policymakers and program administrators support equitable economic development and workforce development with consideration for job quality. Understanding employer investments in training would help postsecondary education align programs to be supportive and complementary to these efforts.

And, most important, all these actors within the postsecondary education and training system would be positioned to give students and workers the information they need to make decisions about their own investments in skill-building. As postsecondary organizations develop a stronger link to employers and employer needs, students themselves would have better information about careers and the skills required to more effectively navigate their educational pathways.

Approaches to Knowledge-Building

A program of related knowledge-building activities is needed to uncover the most effective ways state and local governments, nonprofit organizations, public workforce and economic development agencies, and philanthropy can work with employers to ensure a properly prepared and skilled workforce.

The key to this program is being able to engage with, study, and learn from employers. Therefore, the critical first part of this knowledge-building agenda is to explore new ways of partnering with

employers and employer organizations around human resource issues, especially those affecting low-wage and low-income workers. This could mean researchers partnering with organizations like the Society for Human Resource Development or the Association for Training and Development to explore key questions of concern. It could include assembling groups of leading employers in knowledge-building conversations to understand their challenges and perspectives, build relationships, and uncover common questions and goals to identify where future research would be most helpful.

Another part of the agenda is to study the approaches employers are already taking to build skills, particularly among less-skilled workers. Many case studies exist about different employer approaches to reach specific goals across different sectors, both alone and in partnership with educational and training or other workforce organizations. Some studies are targeted to employers and some to potential employer partners. Research is needed that examines whether (and which) employers take up these different approaches and the reasons they do or do not. This research would engage employers in qualitative implementation and process studies to understand the staffing challenges from their perspectives, assess use of different approaches to address those challenges (and familiarity with approaches not being used), and understand the challenges to implementing them. This research requires access to employers, so it would build on the partnership development described above. It also requires understanding of the business environment, so the research may be best done by sector, engaging industry experts as part of the work.

After these activities, research studies could seek to understand the return on investment for employers of different approaches to build worker skills. This research would consider the benefits that accrue to employers in ways that align with the metrics most important to them—that is, those related to human capital or business operations. Documenting efforts that get at the “pain points” for business can help human resource professionals make the business case within their companies, and it can help education and training or other interested organizations make their case to employers about the value of partnerships. Studies in this area will vary from descriptive documentation of outcomes to more rigorous evaluations to understand what works.

A final part of the knowledge-building agenda is to develop information in the form of guides, tools, and indicators for local area leaders to assess and meet their workforce needs. This work would be in partnership with local area collaborations of multiple stakeholders. Some of this work involves bringing together existing knowledge about proven approaches to improving the skilled workforce (including the results of some knowledge-building activities already described) in formats accessible to local leaders. Some of this work uses available data and new data collection to assess the needs of the local workers (e.g., how well does the existing workforce meet the needs of employers, or do some groups need

additional “bridge skills” to be able to take up existing educational opportunities). This work also includes mapping existing local workforce systems to determine gaps and leverage assets. These efforts would develop indicator measures of local goals to enable areas to track progress. All these products would be combined with on-the-ground assistance in convening partners—such as municipal governments, public workforce system actors, community colleges, workforce training providers, and employers—and facilitating local processes to set and achieve goals.

Priority 4: Develop Better ROI Measures of Postsecondary Programs to Inform Consumers and Guide Public and Private Investments

Measuring the ROI of postsecondary programs—whether an English major at a public university or a coding boot camp offered by a private company—presents both conceptual and empirical challenges. These ROI measures reflect both the return from a program (usually measured using earnings, though nonpecuniary benefits are important as well) and the costs of attending. For students, these costs include tuition, fees, books and supplies, and forgone earnings. For policymakers and taxpayers, they also include public investments, such as subsidies of public colleges and federal aid dollars (Blagg and Blom 2018).

“Students are making career decisions and major financial bets before they go to college and having never stepped foot on a job site. The fact is that many students lack work experience or do not receive proper career advising and thus are often making an uneducated guess that the expensive educational pathway they select will work out for them (Will they enjoy the field? Will it pay enough? Do jobs exist in the region in which the person resides?).”

—Steve Partridge, Northern Virginia Community College

Differences in outcomes and costs cause ROIs to vary widely across programs.³⁵ A low-tuition program or one that offers generous financial aid can provide a good return to a student with only modest gains in wages. An expensive program will have to deliver a larger bump in earnings potential to produce

the same ROI. Measures for policymakers look somewhat different; a state grant is free money from the perspective of the student's ROI, but it must be factored into costs when calculating the state's ROI.

Applying Knowledge to Accelerate Solutions

Better measures of ROI would help many actors. They are of primary importance for federal and state policymakers, who make a range of decisions around the provision and subsidy of higher education. Congress and the Department of Education need to make informed decisions about which programs should be eligible for federal grants and loans. State policymakers need to assess the effectiveness of their public institutions and provide them with an appropriate level of funding. Broad measures of ROI are necessary to discourage policymakers from using earnings as the only metric for assessing program value. Funders of other training programs would also benefit from better understanding costs relative to program outcomes.

Better measures of ROI would also empower students to decide whether any of their available options are worth the time and money, and if so, which one might be the best bet. Private investors could use improved ROI information to provide capital to students through instruments such as ISAs, the pricing of which could convey valuable information to students about the relative costs and benefits of different options. Postsecondary education providers could use these measures to assess their program offerings with the goal of improving programs that are producing weak outcomes for students and expanding programs with strong outcomes.

Approaches to Knowledge-Building

We see value in a two-pronged approach to developing measures of ROI and translating those measures for use by various audiences. First, there is a need to build on existing efforts that use student-level longitudinal data systems to generate institution- or program-level ROI measures. Achieving this goal will require addressing various technical and methodological challenges, such as adjusting for the wide variation in academic preparation and demographic characteristics of students attending different programs.

Second, it is not sufficient to simply build databases and post them in a public place. The users of this information need to buy into its value, and the information needs to be tailored to their needs. State policymakers and leaders of higher education institutions need to be at the table if the ROI measures developed are going to be relevant to and actionable by them.

Clearly, “if you build it, they will come” will not suffice when it comes to providing information to potential students and their families (Blagg et al. 2017). We see a need for a new generation of largely qualitative research with potential students to understand how they process information and how measures can be made meaningful and useful to them as they consider whether and where to go to college. Once we have good measures in hand, we need to evaluate different mechanisms to communicate them, such as integrating them into existing advising resources.

Priority 5: Create Conditions for Responsible Private Financing of Postsecondary Education and Training to Supplement a Stronger System of Federal and State Support

Private-sector financing of postsecondary education and training through ISAs may supplement federal loans at eligible programs or act as a stand-alone funding source at ineligible programs. These programs are most likely to succeed in the context of federal and state funding systems that provide strong grounding for an equitable postsecondary financing system.

But there are significant questions around the implementation and regulation of ISAs, and forging ahead without adequate answers poses real risks to both students and investors. What policy framework is needed to allow for innovation and experimentation while setting minimum standards that will protect consumers from predatory behavior? There is widespread understanding of the need for such safeguards, and Congress has introduced legislation to establish them, but as of yet there is no consensus on how to balance innovation with consumer protection.³⁶

We also need to better understand whether ISAs can effectively serve low-income and at-risk students and the risks and likely benefits to students with different backgrounds and different educational and career paths. Skeptics see ISAs as a niche product for the small set of students who could also obtain favorable terms in private credit markets. With assistance from nonprofit funders, innovators such as Better Future Forward are working to prove these skeptics wrong.

Applying Knowledge to Accelerate Solutions

This kind of knowledge about ISAs is needed by federal and state legislators and regulators who want to create a policy environment in which experimentation is possible and consumers are protected from

predatory actors. Policymakers are likely to be hesitant to legislate this model into wider existence if they don't understand the risks involved and how to mitigate them.

Providers of ISAs, including both for-profit investors and nonprofit organizations, need this information to develop financially sustainable products that effectively serve students. A properly regulated market would allow ISA providers to operate with confidence, knowing that the contracts they sign with students will be enforceable and that all actors will abide by a common set of rules. Broader knowledge about ISAs that is not provider specific, such as how payments are collected and how they can effectively serve disadvantaged students, could enhance the quality of products offered sectorwide.

“It would be great to better understand the sorts of supportive services that our students need and interventions that we know are of value to students, particularly cost-effective ones ... [ISAs] would pay for themselves because if they improve outcomes, that’s better for the student and what’s better for the student is also better for the investors.”

—Kevin James, Better Future Forward

Approaches to Knowledge-Building

The ISA model is a relatively new innovation that comes in many flavors, from traditional institutions supplementing private loans to partnerships with student support providers. A primary area of knowledge-building relates to increasing understanding of common challenges faced by providers, both by convening ISA providers and surveying students who use them (including those now in repayment). This knowledge-building could be supplemented by drawing lessons from other areas, such as housing finance, about how to experiment with new financial products while protecting consumers.

There is also a need to evaluate specific ISA-based interventions, such as the kinds of partnerships Better Future Forward is forming with college coaching organizations. In this case, the intervention is both coaching and a form of financing that is a substitute for other ways of supplementing available public funding (such as working longer hours). This bundled intervention may have effects both when

students are in college (e.g., on academic outcomes such as credits earned) and after they leave (e.g., on their financial health as they enter the labor market and enter repayment on student loans and ISAs).

Finally, we see a need for the development of open-source financial modeling tools based on ROI data to calculate the circumstances under which ISAs will make sense for students and providers. This kind of analysis would provide a broader view of which students and programs are likely to be well-served by ISAs offered on which terms (e.g., returns demanded by traditional versus social impact investors); it would also directly answer some of the access and equity questions at the heart of the ultimate viability of the ISA model.

Notes

- ¹ Education and training alone will not guarantee economic success; nor is employment preparation the sole purpose of postsecondary education. Other briefs in this Next50 Catalyst series explore suggestions for economic success ranging from improving job quality to affordable housing.
- ² Also see Drew DeSilver, “For Most U.S. Workers, Real Wages Have Barely Budged in Decades,” *Fact Tank* (blog), Pew Research Center, August 7, 2018, <https://www.pewresearch.org/fact-tank/2018/08/07/for-most-us-workers-real-wages-have-barely-budged-for-decades/>.
- ³ See “What Would It Take to Provide Quality Jobs and Advancement Opportunities for All Workers?” at next50.urban.org.
- ⁴ “Data Dashboard,” Complete College America, accessed March 27, 2019, <https://completecollege.org/data-dashboard/>; “Guided Pathways to Success: The National Picture,” Complete College America, accessed March 22, 2019, https://hechingerreport.org/wp-content/uploads/2017/08/nationalgps_07042017.pdf.
- ⁵ “What Is ASAP?” CUNY, accessed March 29, 2019, <http://www1.cuny.edu/sites/asap/about/>.
- ⁶ Pierce College, “Pierce College Recognized by the Aspen Institute as One of the Top Community Colleges in the Nation,” press release, April 2, 2019, <https://www.pierce.ctc.edu/news/20190403/pierce-college-recognized-aspen-institute-one-top-community-colleges-nation>.
- ⁷ California State University system, “CSU Makes Sweeping Changes to Developmental Education Policy,” press release, August 3, 2017, <https://www2.calstate.edu/csu-system/news/Pages/CSU-Makes-Sweeping-Changes-to-Developmental-Education-Policy.aspx>; Timothy P. White, “CSU Innovations in Developmental Education Will Support Those Who Need It Most,” *Higher Education Today* (blog), American Council on Education, January 16, 2018, <https://www.higheredtoday.org/2018/01/16/csu-innovations-developmental-education-will-support-need/>.
- ⁸ Rich Robbins, “Advisor Load,” NACADA Clearinghouse, accessed March 29, 2019, <https://www.nacada.ksu.edu/Resources/Clearinghouse/View-Articles/Advisor-Load.aspx>.
- ⁹ See the information on the Association of Public & Land-Grant Universities website, including its writeup of Georgia State University as a recipient of a Transformational Planning Grant (<http://www.aplu.org/projects-and-initiatives/urban-initiatives/collaborating-for-change/projects/transformational-planning-grant/tpg-institutions/georgia-state-university.html>) and the related two-pager (<http://www.aplu.org/projects-and-initiatives/urban-initiatives/collaborating-for-change/Georgia-State-University-TCC-One-Pager.pdf>).
- ¹⁰ For more information, see <https://postsecondary.gatesfoundation.org/areas-of-focus/innovation/technology-enabled-advising/technology/>.
- ¹¹ See <http://vlac.lonestar.edu/help>.
- ¹² See the writeup at the Online Learning Consortium, https://secure.onlinelearningconsortium.org/effective_practices/comprehensive-online-student-support-services.
- ¹³ Competency-based learning is at the center of work-based learning models such as apprenticeship, but not all work-based learning includes CBE, which is also found in bricks-and-mortar training as well as forming the foundation of online programs. Many fully online programs include CBE, but the universe of online coursework is much larger, encompassing hybrid courses that mix classroom and online learning, single online courses, and degree and certificate programs that are offered fully online but are not competency-based.

- ¹⁴ Prior learning assessment is the process by which someone’s experiential learning is assessed and evaluated for granting college credit, certification, or advanced standing toward further education or training (Klein-Collins and Hudson 2017).
- ¹⁵ “Competency-Based Learning or Personalized Learning,” US Department of Education, accessed March 23, 2019, <https://www.ed.gov/oii-news/competency-based-learning-or-personalized-learning>.
- ¹⁶ “UW Flexible Option—A New, Smarter Way to Earn a UW Degree,” University of Wisconsin System, accessed March 29, 2019, <https://ecampus.wisconsin.edu/online-degree-programs/uw-flexible-option/>.
- ¹⁷ “Competency Education,” Salt Lake Community College, accessed March 29, 2019, <https://www.slcc.edu/development-and-alumni/your-impact/archived-stories/competency-education.aspx>.
- ¹⁸ Work-based learning has varied definitions. Linked Learning, which focuses on K–12 education, defines work-based learning as the continuum from career awareness, exploration, and preparation to training (<https://www.linkedlearning.org/about/work-based-learning/>). Jobs for the Future defines work-based learning as “a student or worker completing meaningful job tasks in a workplace that develop readiness for work, knowledge, and skills that support entry or advancement in a particular career field” (Kobes and Cahill 2018, 1).
- ¹⁹ “Kentucky Awarded Nearly \$1.1 Million Grant for Apprenticeships,” *Lane Report*, June 14, 2019, <https://www.lanereport.com/102287/2018/06/kentucky-awarded-nearly-1-1-million-grant-for-apprenticeships/>.
- ²⁰ For more information, see “About Career Pathways,” US Department of Health and Human Services, Administration for Children and Families, <http://www.career-pathways.org/about-career-pathways/>.
- ²¹ For one example, see the description of the Upstate New York Training and Upgrading Fund on 1199SEIU’s website, <https://www.1199seiubenefits.org/regions/upstate-new-york/>.
- ²² Jaime S. Fall and UpSkill America, “Five Questions for Amazon’s Global Leader for Career Advancement, Juan Garcia,” Aspen Institute blog, August 2, 2016, <https://www.aspeninstitute.org/blog-posts/five-questions-amazons-global-leader-career-advancement-juan-garcia/>.
- ²³ For more information, see <https://grow.google/programs/it-support/>.
- ²⁴ For more information, see Greater Washington Partnership, “Greater Washington Partnership Announces Progress on Capital CoLAB with National & Regional Leaders,” press release, March 20, 2019, http://www.greaterwashingtonpartnership.com/wp-content/uploads/2019/03/03.2019-CoLAB-Announcement_Press-Release.pdf.
- ²⁵ For more information, see <https://nationalfund.org/> and <https://www.uschamberfoundation.org/managing-talent-pipeline-0>.
- ²⁶ For more information, see <https://innovate-educate.org/>.
- ²⁷ “Breaking Even” from “Understanding College Affordability,” Urban Institute, April 2017, <http://collegeaffordability.urban.org/breaking-even/#/>.
- ²⁸ Andrew Kreighbaum, “Democratic Take on the Higher Education Act,” *Inside Higher Ed*, March 1, 2019, <https://www.insidehighered.com/news/2019/03/01/senator-patty-murray-says-higher-education-legislation-must-focus-college>.
- ²⁹ Matthew Chingos and Erica Greenberg, “The Big Drawback of Federal Proposals to Make Pre-K and College Free,” *Urban Wire* (blog), Urban Institute, January 26, 2016, <https://www.urban.org/urban-wire/big-drawback-federal-proposals-make-pre-k-and-college-free>.
- ³⁰ For more information, see <http://collegepromise.org/>.

- ³¹ For more information, see <https://purdue.edu/backaboiler/index.php>. (The president of Purdue University, Mitchell E. Daniels Jr., is a member of the Urban Institute’s board of trustees. Daniels and the other board members do not influence Urban’s research or its findings.)
- ³² Imogen Crispe, “ISAs and Deferred Tuition at Bootcamps,” Course Report blog, March 27, 2019, <https://www.coursereport.com/blog/coding-bootcamp-deferred-tuition-income-share-agreements#WhichBootcampsofferIncomeSharingAgreements?>.
- ³³ Better Future Forward, “Better Future Forward Launches Income Share Agreements Fund for Low-Income Chicago Students Pursuing a College Degree,” November 15, 2018, <https://www.coursereport.com/blog/coding-bootcamp-deferred-tuition-income-share-agreements#WhichBootcampsofferIncomeSharingAgreements?>.
- ³⁴ “PayScale’s 2018–19 College Salary Report,” PayScale, accessed March 29, 2019, <https://www.payscale.com/college-salary-report>.
- ³⁵ “Student Outcomes: Reports and Resources,” State Council of Higher Education for Virginia, accessed March 25, 2019, <http://research.schev.edu/>.
- ³⁶ Office of Senator Marco Rubio, “Rubio, Young Reintroduce Innovative Bill the Make College More Attainable,” press release, February 7, 2017, <https://www.rubio.senate.gov/public/index.cfm/press-releases?ID=FF02EEE8-C322-4404-8AF2-916C207793B5>.

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