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CONNECTING APPRENTICESHIP AND HIGHER EDUCATION

Eight Recommendations

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INTRODUCTION

Growing our national apprenticeship system has been a goal of American policymakers on both sides of the aisle for a number of years. In 2014, President Barack Obama issued a national call to action, with a goal of doubling the number of apprentices in five years. The Trump administration has also zeroed in on expanding apprenticeship as a priority for helping more Americans access high-quality training and good jobs. In a time of intense partisan polarization, apprenticeship has maintained broad appeal. In fact, in a recent national survey, Americans viewed apprenticeship as favorably as a four-year public university education, and considered it equally as effective at preparing individuals for a career.¹ A large majority of respondents, both Democrats and Republicans, “strongly favored” more government spending to support the expansion of apprenticeship programs.²

Apprenticeship’s appeal is not hard to understand. It is highly effective at equipping individuals with valuable knowledge, skills, and work experience. In contrast to higher education, where just over half of students graduate with a bachelor’s degree in six years, most apprenticeship programs have completion rates of 80 percent or better.³ More than 90 percent of those who complete apprenticeships land jobs with annual wages that exceed \$60,000.⁴ Apprenticeship graduates also finish their programs with zero student loan debt, compared to an average of just over \$30,000 for today’s college students.⁵

It is also a great way for employers to address skill gaps and ensure they are getting the most from their training investments.⁶ When employers depend solely on the education system to prepare their workforce, they often find that new hires are far from job ready. When they use apprenticeship instead and partner with a college for the related instruction, they can be more sure that trainees are learning firm-relevant skills as well as broad knowledge about the field. Studies have also shown that apprentices tend to be loyal to their sponsors; fears of poaching of freshly trained apprentices are generally not borne out.⁷ Not surprisingly, surveys of employers who use apprenticeship reveal high levels of satisfaction with the strategy.⁸

Despite the broad appeal of apprenticeship, it has not been easy to expand the system. Since 2014, after several years of targeted investments, the number of active apprentices in the United States has only grown to 500,000, from about 400,000.⁹ Compare that to the 17 million undergraduate students enrolled in college. Apprenticeship opportunities remain elusive, particularly in industries outside the skilled trades and manufacturing. According to the U.S. Department of Labor, health care—the industry with the greatest job growth—had only 1,852 apprentices in 2016. Information technology, another U.S. sector with rapidly expanding job opportunities, had fewer than 1,000 apprentices.¹⁰

To make apprenticeship opportunities more widely available, we must connect apprenticeship to our higher education system, enabling people to be apprentices and college students at the same time.

Why is it so difficult for apprenticeship to break into new sectors? Why don't we see more apprenticeship programs popping up for nurses, medical technicians, teachers, engineers, and cybersecurity specialists, all occupations where employers are experiencing shortages? Germany, Switzerland, and the United Kingdom—countries with strong or expanding apprenticeship systems—use apprenticeships to educate workers in these fields. The United States, however, depends almost entirely on our higher education system. With the exception of the skilled trades, career advancement in the United States is also increasingly linked to associate or bachelor's degrees, which only colleges and universities can award.

In other words, apprenticeship is held back in the United States because it cannot deliver the credentials—college degrees—required for career advancement. To make apprenticeship opportunities more widely available, we must connect apprenticeship to our higher education system, enabling people to be apprentices and college students at the same time. Such efforts are underway in countries with extensive apprenticeship systems. In Switzerland, for example, professional colleges and applied universities allow apprentices to earn bachelor's and master's degrees.¹¹ Germany offers a growing number of programs that integrate apprenticeship with academic degree tracks. Deutsche Bank,

notably, provides a three-year apprenticeship program in banking that combines university study with on-the-job learning.¹² The United Kingdom has also introduced “degree apprenticeships” to attract young people to apprenticeship.¹³

Growing apprenticeship to develop the next generation of workers and industries will require similar approaches. Given the rising cost of college, apprenticeship—which pays wages from the first day of a program—offers an effective and equitable strategy for significantly expanding access to higher education. It can help launch people directly into good jobs without the loan debt or long job searches that are weighing down so many graduates today. The recommendations at the end of this report call for reforms to our apprenticeship and higher education systems to foster greater collaboration between the two while laying a foundation upon which apprenticeship programs could spread across a range of career fields. The recommendations fall into four broad categories: 1) strategies for recognizing apprentices and apprenticeship programs in our higher education system, 2) financing strategies to expand apprenticeship, 3) registration models for apprenticeships in higher education, and 4) design principles and practices for building degree apprenticeships.

LAYING THE FOUNDATION FOR A DUAL SYSTEM

To expand access to apprenticeship in America, bridges must be built to connect systems that not only have little experience working together but which also view one another with suspicion. But despite their distinct histories and identities, apprenticeship and higher education are more alike than not. Each is a system of teaching and learning that provides individuals with knowledge, skills, and credentials. Both require qualified instructors who can assess learning, and both aim to prepare their learners with a mix of specific and general knowledge. Even within our current higher education system, apprenticeship-like approaches are not uncommon. Cooperatives, residencies, practicums, and “clinicals” are all close cousins of apprenticeship that recognize the value of work-based and experiential learning.

In the United States, apprenticeship and higher education have evolved separately, each with their own traditions and cultures. They have also developed distinct policy approaches for regulating, financing, and designing the programs they deliver. These policies, in turn, reinforce the distinctions between the two systems, making it difficult for apprentices to earn college credit for what they learn and arduous for colleges to register apprenticeship programs and embed the financial models necessary to integrate them into degree

tracks. The United States has never cultivated a dual education system that links learning in school and in work. Doing so will require significant changes to policy and practice across multiple domains.

A critical first step in building those connections is to create more opportunities for individuals to participate in both systems at the same time—to be both a college student and an apprentice. In countries with strong dual education systems, the connection between schools and apprenticeship is seamless. Students are enrolled in vocational schools that prepare them for an apprenticeship in a particular occupation. During their apprenticeship, they continue their classroom studies, sometimes in the same school, sometimes in a vocational college. Apprentices are students, and students are apprentices.

In contrast, the roles of “apprentice” and “student” rarely overlap in the United States. All apprentices engage in some form of classroom instruction, but only a tiny percentage also fit the definition of a college student if we understand that to mean a student in a program leading to an academic award—an associate or bachelor’s degree. Most Americans who find their way to an apprenticeship program do so from outside of school, not during their time as a student. In fact, the word “student”

never appears the foundational federal legislation on apprenticeship, the National Apprenticeship Act, also known as the Fitzgerald Act of 1937.

The stark separation between our apprenticeship and postsecondary education systems is surprising given the popularity of career-focused education in the United States. Indeed, the fastest-growing segment of our postsecondary education system comprises career-focused certificate, associate, and bachelor's degree programs. These vocational programs, which we call "career and technical education," are designed to prepare students for particular occupations. The National Center for Education Statistics (NCES) estimates that about 40 percent of community colleges students—more than 2 million students—are enrolled in a career and technical education program.¹⁴ Among those, fewer than 100 were likely to be enrolled in an apprenticeship program at the same time.

"Likely" is the key word. We have no reliable way to track how many apprentices take courses in our colleges or universities. And since apprentices enrolled at institutions of higher education are indistinguishable from other students, we also know almost nothing about their educational outcomes or experiences. More importantly, without a way to clearly identify college students participating in apprenticeship programs, we cannot target financial aid or other student supports toward them nor can we reward institutions that create apprenticeship opportunities. For example, if a state wanted to encourage its community college system to create degree pathways for apprenticeship programs, it could establish financial rewards for colleges that graduate apprentices. First, however, the colleges and the policymakers need to know who those students are. Similarly, if colleges want to determine whether apprenticeship is an effective strategy for increasing enrollments, improving graduation rates, or reducing reliance on student loans, they need the capacity to track those students.

The Student-apprentice

To design policies to support apprenticeship pathways to and through higher education, we must first make students who are also apprentices visible in higher education data systems. "Student-apprentice" needs to be a distinct category that we can recognize, track, and support through public policy. The definition should capture the core elements of each identity and be clear, verifiable, and compatible with any definitions already in federal or state statute.

The Higher Education Act of 1965 defines a "regular student" as one who "is enrolled or accepted for enrollment at an institution for the purpose of obtaining a degree, certificate, or other recognized educational credential offered by that institution."¹⁵ The National Apprenticeship Act, meanwhile, defines an apprentice as "a worker aged at least 16 years of age [...] who is employed to learn an apprenticeable occupation as provided under the standards of apprenticeship." Combining the definitions, we come up with:

A "**student-apprentice**" is a student or apprentice who meets the definition of "regular student," as defined by the Higher Education Act, 34 CFR Part 600, and "apprentice" as defined by the National Apprenticeship Act, 29 CFR Part 29.2.

This definition excludes apprentices enrolled in college or university courses that are "not-for-credit" and do not lead to educational certificates or degrees. This is an important distinction. Most institutions of higher education have no way of recognizing apprentices on their campuses, but that does not mean they offer no instruction to apprentices. The majority of colleges or universities that provide the "related technical instruction" component of apprenticeship programs do so through their workforce or continuing education divisions, which are separate from their credit-bearing certificate and degree programs. In some cases, colleges will retroactively award credit for an apprentice's classroom instruction through a process called "prior learning assessment." Apprenticeship providers may

also have the classroom instruction portion of an apprenticeship assessed by an outside evaluator such as the American Council on Education (ACE). These organizations issue “credit recommendations” for the learning, which an apprentice can take to a college or university registrar’s office for consideration. The Registered Apprenticeship College Consortium (RACC) contains hundreds of colleges that have agreed to accept ACE credit recommendations for apprenticeship students.

Currently, these efforts to help apprentices earn college credits tend to be inconsistent. They are also often expensive for the college or the apprentice. We lack data that shows how often colleges accept third-party credit recommendations for coursework delivered as part of an apprenticeship or how many apprentices undergo prior-learning assessments. Veterans, adult learners, and students in career and technical programs at community colleges report little success in obtaining credit for learning that occurred outside the academic side of their respective institutions. They also cite roadblocks in applying that learning toward degree completion.

Our goal is to have “student-apprentices” earn an academic award at the same time they complete their apprenticeship programs. To accomplish this, programs enrolling student-apprentices should be designed from the outset as dual programs that culminate in both an academic award and a certificate of completion for the apprenticeship. There are successful examples. Apprentices at Aon Insurance earn an Associate of Arts from Harold Washington College (part of the City Colleges of Chicago) upon the completion of their two-year apprenticeship with the company (see Box 1.1). The same is true for apprentices in Fairview Health Services. They complete their program with a Bachelor of Science in nursing.

The Degree Apprenticeship

The second step in building connections across our higher education and apprenticeship systems is to create degrees that reflect the quality standards of both systems. These “Degree Apprenticeship” programs should be intentionally designed to integrate the on-the-job learning and mentorship central to apprenticeship with the general education and broad knowledge that form the heart of a college degree. Student-apprentices would be able to fulfill requirements of both while also earning a living. Here is a proposed definition:

*A “**Degree Apprenticeship**” is an apprenticeship program that meets the standards established in the National Apprenticeship Act 29 CFR Part 29 and the requirements of a postsecondary degree program as established by the relevant state education agency in the state where the program is delivered.*

Clear definitions of “student-apprentice” and “Degree Apprenticeships” create a foundation for policies and investments that support the growth of Degree Apprenticeships. They also offer an anchor for policies that, while promoting apprenticeship in new sectors, need the participation of higher education institutions. And they provide the platform upon which an evidence base can be constructed to show the effectiveness of apprenticeship as a strategy for promoting degree completion, reducing reliance on student loans, and improving post-graduation outcomes.

Box 1.1 Ed Richardson—Student-apprentice

Ed Richardson didn't become an apprentice to avoid going to college. Rather, he found apprenticeship a smoother path to an education.

After high school, Ed spent a year in junior college before dropping out. He "wasn't doing school right," he says, because he "didn't understand the value of education." That has changed. Nowadays, he spends 14 hours a week in an Associate of Arts program at Harold Washington College in Chicago and another 26 hours working as a claims analyst at Aon. He splits some days between work and school, but there's no hard line between the two. "I learn all day long, basically," he says.

Ed's move into a Degree Apprenticeship began shortly after dropping out, when he realized he wanted more than a dead-end job as a security guard. "I knew I needed a new opportunity," says Ed, who was living with his mom and in danger of being laid off. "I wanted to go back to school, but I had bills to pay... I had to find a career that would train me." He set up a Google Alert for job postings for trainees or apprentices.

One morning, an Aon apprenticeship program came through the filter. Aon's insurance apprentices focus on specific disciplines within the company's diverse activities. For Ed, it is reinsurance. These are the policies that insurance companies take out on their own holdings to spread out their risk. Ed is becoming an expert in all their aspects. It's complicated work—and a decidedly unconventional apprenticeship—but no experience was required and tuition was paid. "I felt like it was a lotto ticket when I filled out the application," Ed says.

And Ed's next steps? He's interested in pursuing an MBA and moving into the management and strategy side at Aon. "I'm just going to keep working hard, taking every opportunity presented to me," he says. For Aon, the investment has produced a dedicated employee the company might never have found had it only looked for candidates with a bachelor's degree.

FINANCING STRATEGIES FOR STUDENT-APPRENTICES

Apprenticeship can be expensive for employers. Most companies fully recover the costs of their investment in training apprentices, but it can take years and it is not without risk. A recent study by the Department of Commerce found that an apprenticeship program can cost an employer as much as \$250,000 per apprentice, depending on the length of the program, the apprentice's wages, the mentor's wages, and tuition and equipment costs.¹⁶ That does not include program startup costs, which can be substantial.

Growing American apprenticeship will require continued public investment to build the capacity of key stakeholders like employers, workforce and industry intermediaries, schools, and state and local agencies. Discretionary grant programs like the American Apprenticeship Initiative (AAI) launched in 2015 are a good example how the federal government can help support the growth of apprenticeship generally, across a broad range of industry sectors and populations. Using funds collected through the H-1B Visa Program, the U.S. Department of Labor awarded 25 grants to a diverse range of partnerships among employers, unions, colleges, and industry associations to expand apprenticeship's reach into new economic sectors.

The H-1B visa program exists to help American employers staff jobs they cannot fill with domestic applicants with foreign workers. The Department of Labor collects fees from employers in exchange for the visas. The Department is required by law to use those funds, which in recent years have averaged between \$100-200 million annually, to help American workers gain access to skills and high quality jobs. Given the proven effectiveness of apprenticeship as an employment and training strategy and the high return on investment to employers and workers, using the funds to expand the system into new and emerging industry sectors is sound public policy and should continue.

Connecting our apprenticeship and higher education systems will require additional targeted financing that addresses the tuition costs of student-apprentices enrolled in degree programs at colleges or universities. The United States currently has no clear guidelines on who pays for the related technical instruction required in all registered apprenticeship programs. In European countries where apprenticeship is widely practiced, the classroom instruction is provided through taxpayer-funded public high schools and colleges and is free for both the apprentice and the employer. Swiss companies pay so much in taxes to benefit local schools and professional associations that they

actually lose money if they do not participate in the apprenticeship system. In the United Kingdom, a new special tax on large employers is pooled into a fund that smaller companies can access to help cover the tuition costs of apprentices.

Since the 1930s, labor-management funds (also known as joint-training funds) have played an essential role in financing the instruction of apprentices in the United States. These funds pool contributions from union members and employers to offset the cost of training equipment, instructors, and sometimes even paid release time to attend classes. As union density in the United States has declined, so has the reach of labor-management funds, which are now most commonly found in the building trades and manufacturing, with some presence in education and in health and human services. They are nonexistent in fields like information technology, business, and finance.

The ideal public financing strategy to support the education of student-apprentices would include financial aid that is 1) available to all student-apprentices, 2) covers the full cost of their tuition, and 3) comes in the form of a grant, not a loan. We already have a number of existing federal and state student aid programs. At least one of these, with reforms, offers a finance strategy for apprenticeship.

Federal Programs: Work-Study for Student-apprentices

The federal government spends more than \$150 billion annually to support students in higher education.¹⁷ The aid comes in many shapes and sizes, from the narrowly-targeted TEACH program, which provides scholarships to students aspiring to become teachers, to the very broad Direct Loan program, which furnishes guaranteed loans to students, regardless of institution type or program of study. Of all the federal student aid programs, the GI Bill comes closest to duplicating the criteria needed for public financing of student-apprentices: It is a grant program that fully covers tuition and fees for beneficiaries attending any eligible institutions,

as well as some other expenses such as books and housing. However, it is limited to veterans.

The Pell Grant program also provides grants that, unlike loans, require no repayment. Qualifying students can tap Pell Grants of up to \$5,920 a year,¹⁸ enough to cover annual tuition at most community colleges. However, use of this grant model could disrupt other goals of the apprenticeship strategy. The Pell Grant program is massive, distributing nearly \$30 billion in 2016,¹⁹ but eligibility is limited to students with very low incomes. (Most Pell Grants go to students whose total family income does not exceed \$40,000; nearly 40 percent of the grants go to students in families with incomes below \$20,000.²⁰) An apprentice earning minimum wage and with no other source of family income would qualify for a Pell Grant. However, relying on Pell Grants to finance student-apprentices creates perverse incentives for employers to pay low wages to make their apprentices Pell eligible. The Pell Grant model could also skew Degree Apprenticeship opportunities toward a particular subset of students since it is based more on socio-economic status than interest or ability.

The grants provided through the Supplemental Education and Opportunity Grant (SEOG) program, also aimed at students with the greatest financial need, could have a similar effect. This is not to say that students who qualify for Pell or SEOG should be discouraged from enrolling in Degree Apprenticeship programs. However, these aid programs should not be viewed as a primary source of tuition funds for student-apprentices.

There is one other major federal student aid program: Work-Study. The Federal Work-Study program dates to the 1965 Higher Education Act.²¹ It was designed explicitly to help students pay for college by giving them access to jobs they could combine with full-time study. Colleges and universities receiving Work-Study funds identify jobs—usually within their own institutions or at local nonprofits. Ideally, these jobs are also relevant to students' educational and career goals. The Federal Work-Study program was not created to

support student-apprentices, although its original purpose is closely aligned with the goal of helping students combine learning with meaningful, related work experience, which is at the core of an apprenticeship. With modest reforms, the program could work well as a funding vehicle for student-apprentices.

Specifically, Federal Work-Study funds distributed to institutions would need to be earmarked to pay the tuition costs of student-apprentices, rather than to subsidize the wages of student employees. In other words, Work-Study dollars would go straight toward the balance on student-apprentices' student accounts, not their paychecks. Reforms to the funding formula would also allow funds to flow to institutions that offer Degree Apprenticeship programs.

State Programs: Free College for Student-apprentices

States, too, could be important sources of funding for student-apprentices. Few states currently invest directly in apprenticeship. A small number has pursued strategies similar to the “skills levy” approach in the United Kingdom, in which employers pay into a national training fund that they can then use to support the costs of apprenticeship or other types of workforce training.²² Indiana, for example, bankrolled a special employment and training services fund using fees, penalties, and interest from the unemployment system.²³ The fund provides over \$4 million annually to Ivy Tech Community College for apprenticeship programs. Minnesota levies a

Workforce Enhancement Fee of 0.1 percent of taxable payroll, which it uses to help retrain the unemployed. We can imagine similar funds in states that are looking for ways to pool resources so that both large and small companies have an incentive to participate in apprenticeship expansion.

Targeted tuition waivers are another promising state trend that could support the expansion of apprenticeship and greater involvement of higher education. States like Florida, North Carolina, and Washington have issued tuition waivers for apprentices receiving their related instruction from community colleges.²⁴ While the waivers provide an important benefit to employers and apprentices, these community colleges are not fully reimbursed for the cost of tuition. That is both a burden and disincentive for colleges, which must undergo a lengthy process to create these programs. It also limits the growth of dual programs.

That said, targeted financial-aid programs have potential to be a powerful tool for supporting student-apprentices. “Free college” models like Tennessee Promise or Arkansas’ “ARFuture,” for example, could be modified to address student-apprentices. Similarly, state financial-aid programs aimed at filling high-need, high-wages jobs that require less than a college degree—such as like Kentucky’s Work Ready Scholarship²⁵ or Indiana’s Workforce Ready Grant²⁶—could target tuition costs for student-apprentices. Doing this reduces the risk that public funding would be directed toward programs with little labor market value, since apprenticeship would not exist without employer need.²⁷

REGISTERING PROGRAMS FOR STUDENT-APPRENTICES

Student-apprentices and Degree Apprenticeships can serve as meaningful connections between apprenticeship and higher education. They can also act as platforms for federal and state policies aimed at rewarding colleges that offer Degree Apprenticeships. The proposed definitions of these terms included earlier in this report can be incorporated into student financial-aid programs, such as Work-Study, or added to state performance-based funding strategies. They provide the foundation necessary for targeting public investment and for designing supportive policies that touch higher education and apprenticeship systems.

But neither definition addresses the cumbersome process colleges and universities undergo to start up new programs and make them eligible for federal and state support. On the one hand, institutions often have to obtain authorization from a state higher education agency to launch a new degree offering. Program approval processes vary considerably by state and by type of institution, but they all aim to ensure that any new degree meets basic requisites, such as the number of credits required and the mix of general versus specialized courses.

On the other hand, apprenticeship providers must register their programs with state or federal apprenticeship agencies if they wish to be officially

recognized.²⁸ Registration can qualify programs for some federal and state supports, such as tax credits for employers and tuition assistance for apprentices. The registration process is not well understood outside the apprenticeship community and can be challenging for new program providers to navigate. As we outlined earlier, another way policymakers can spur the expansion of programs for student-apprentices is to make it easier for colleges and universities to register their programs with relevant authorities.

Maintaining High Standards

When considering reforms to the registration system for apprenticeship programs, it is important to distinguish between the standards that are being verified through the registration process and the entity authorized to confirm that those standards have been met. The standards for apprenticeship date back to the original Fitzgerald Act of 1937 and were designed to protect apprentices from providers seeking to pay substandard wages or failing to provide a mix of high quality on-the-job and classroom learning. The standards lay out the terms of the apprenticeship—how long it must last, the mix of on-the-job and classroom instruction, the wage requirements, and more—all of which aim to

ensure the quality of the education, training, and employment experience for the apprentice (see Box 1.2 for the standards).

Nothing in the standards of apprenticeship programs conflicts with the goal of creating more Degree Apprenticeships. To the contrary, the standards set out a blueprint for building programs that merge work-based and classroom learning into a single, coherent program. Apprenticeship providers are required to submit a written plan spelling out the competencies an apprentice must master over the course of the program. They also provide evidence that the apprentice will have adequate support from an on-site mentor as well as release time to attend outside classes. Recent updates to the standards make it easier to deliver shorter programs and allow apprentices to advance based on demonstrated competency rather than seat time. These changes will permit easier integration of Registered Apprenticeships with higher education certificate and degree programs.

Expanding the Ranks of Registration Agents

The process for verifying that apprenticeship-program standards have been met could be updated to make it easier for colleges and universities to register apprenticeship programs. Under the current system, only state and federal apprenticeship agencies known as “Registration Agents” are legally authorized to register the programs. The law defines a registration agency as one of two entities: The U.S. Department of Labor’s Office of Apprenticeship or a State Apprenticeship Agency (SAA).²⁹ The state agencies, in turn, are overseen by Apprenticeship Councils that are made up of a mix of union and business leaders appointed by the governor for fixed terms. Apprenticeship sponsors in a SAA state are required to register their programs with the state agency. Sponsors in the other states are required to register their programs with the Office of Apprenticeship. The authorization of additional registration entities could ease the process for new apprenticeship sponsors while increasing student access to Degree Apprenticeships.

Another critical step in bolstering our national apprenticeship system is to increase the number of educational institutions that sponsor apprenticeship programs. When colleges are direct sponsors, rather than merely providers of related instruction, they may be motivated to expand apprenticeship programs into fields that now require college degrees for entry or advancement. According to the U.S. Department of Labor, there are about 21,000 Registered Apprenticeship programs across the country. The overwhelming majority of their sponsors are individual companies, local unions, labor-management partnerships, or nonprofit organizations. Just 32 sponsors are institutions of higher education.

One strategy for bringing more institutions to the table is to make it easier for them to serve as sponsors and to register programs. Expanding the mission of state education agencies to include approval of Degree Apprenticeship programs is a natural next step. Colleges and universities are already accustomed to working with community college Chancellor’s offices, state offices for career and technical education, state higher education coordinating boards or other relevant state agencies. These agencies, in turn, have experience approving programs, verifying that statutory and regulatory requirements are met, and collecting and reporting relevant data. Most important, an integral part of state education agencies’ mission is to protect students.

Take, for example, the South Carolina Community and Technical College System (SCTCS). The SCTCS office has a team dedicated to promoting registered apprenticeship across the state. Staff work with a wide variety of employers and schools to help register programs with the federal Office of Apprenticeship, and they are intimately familiar with the standards for apprenticeship and apprenticeship sponsors laid out in CFR 29 Part 29 and know when new sponsors have met those requirements. Authorizing the system office to register programs directly would save time and money.

The inclusion of public education agencies among the types of organizations that can register apprenticeship programs would not dilute the standards of apprenticeship detailed in the National Apprenticeship Act. It would simply broaden the range of public entities able to verify that standards

are met. Allowing educational institutions to go through education agencies to establish programs for “student-apprentices” is a logical next step for growing American apprenticeship and connecting it to higher education degree pathways.

Box 1.2 Apprenticeship Standards: A Summary³⁰

Regulations create a set of standards that must be met for an apprenticeship to be registered. Apprenticeship sponsors establish compliance with these standards through a written plan. Included in the plan are:

- Standards for the on-the-job component of the program (a time-based approach of at least 2,000 hours, a competency-based approach, or a hybrid of the two);
- An outline of the work processes in which the apprentice will receive supervised work experience and the time spent on each process;
- A description of at least 144 hours per year of related instruction in technical subjects related to the occupation;
- A description of periodic review of the apprentice's performance on the job and in related instruction;
- A schedule of progressively increasing wages for the apprentice with an entry level that is at least minimum wage;
- A probationary period that does not exceed 25 percent of the length of the program or one year, whichever is shorter;
- Safety training and assurance of safe equipment and facilities for on the job training as well as related instruction; and
- Recognition of successful completion through a certificate issued by the registration agency.

Source: Congressional Research Service, <https://fas.org/sgp/crs/misc/R44174.pdf>.

DESIGNING PROGRAMS FOR STUDENT-APPRENTICES

Targeted financial supports and modernized registration processes can help colleges and universities play a larger role in our national apprenticeship system. The goal of these policy reforms is to encourage institutions of higher education to partner with employers and deliver degree programs for apprentices across a much wider range of career fields. But the institution still has to figure out how to design and deliver the programs—and a degree apprenticeship will be different than a typical degree. A significant portion of it will be delivered in workplaces outside the institution and under the guidance of mentors and supervisors rather than traditional faculty. Integrating the “on-the-job” learning into the degree program can be challenging for institutions, but it is by no means impossible.

The Challenge of Making All the Learning Count

Many colleges already deliver the related technical instruction component of apprenticeship programs. However, surprisingly few connect that instruction to a degree and even among those that do, very few count the on-the-job learning for credit. For example, The Hartford Insurance Company has a new

apprenticeship program that is running in partnership with Rio Salado College in Arizona. The apprentices are taking credit-bearing courses that can add up to an Associate’s of Applied Science in Insurance Studies, but none of the learning on-the-job counts toward the degree. In this case, if the apprentices want to earn a college degree, they will need to take the same number of courses as any other student, even though the student-apprentice is also in a structured learning program at work.³¹

Why does this matter? Because integrating learning at work with learning in the classroom is the essence of “dual education,” which is how apprenticeship is generally described in most European countries. In dual education systems, learning in the classroom is explicitly designed to complement and build upon on the experiential learning at the worksite—and vice versa. Plenty of American students—in fact most—already work while in college. The point of an apprenticeship is that work and school are both places of structured, supervised learning. Failing to connect the two is both inefficient and likely reduces the impact of the learning obtained in both settings. When colleges do not count the structured training apprentices are receiving at work, they are leaving a lot of learning on the table.

But counting work-based learning for credit can be hard for colleges to do. In fact, institutions of higher education are famously averse to crediting learning that occurs outside their four walls (or websites)—and there are many good reasons for their caution. For one, it can be risky for them. They are accountable to their accreditors, state agencies, and the general public, for ensuring the integrity of degrees they issue, which means guaranteeing that a student has learned enough to earn that degree. When much of the learning has occurred outside the institution, colleges are understandably reluctant to count it.³² For another, colleges have few financial incentives to count learning they have not delivered. Providing credits for outside learning can mean students enroll in—and pay for—fewer courses at the institution. Finally, integrating on-the-job learning with a degree program is expensive for colleges. They have to evaluate the curricula (or develop it themselves), ensure proper assessment methods are in place and that the assessors of learning are qualified, and consider how the learning fits into the sequence of courses that may have already been designed for that degree program. All of that costs money. To add to the difficulty, apprentices are often coming to the institutions in small numbers. Colleges simply cannot afford to design integrated degree programs to serve three or four apprentices at a time. These start-up costs of degree apprenticeship programs for colleges can be just as significant as those facing employers.

Partnerships and the Crucial Role of Intermediaries

Despite these challenges, a few colleges have managed to build fully integrated degree apprenticeship programs that count the on-the-job learning for credit. The Community College of Philadelphia (CCP), for example, offers an Associates of Arts in Early Childhood Education to student-apprentices in a program sponsored by the District 1199C Training and Upgrading Fund. The apprenticeship is designed specifically for childcare workers who have experience in the field but lack an

associate's degree. The Training Fund has managed to recruit thirty-six apprentices working across more than twenty employers. Thanks to funding from the employers, a variety of philanthropies, and some public agencies, the Training Fund has been able to finance the development costs of the program and the tuition costs of the apprentices. The large number of apprentices made it possible for CCP to treat them as a cohort of students, and design a program to meet their learning needs.

The apprentices take between 4 and 8 courses at CCP, depending on how much previous college experience they have. These courses include a mix of general education classes, like math and language arts, as well as more specialized courses on child cognitive development and lesson planning. The general education courses have been contextualized around the theory and practice of early education. The English requirement, for example, included reading a book about the importance of play in a child's intellectual development. The introductory psychology courses analyzed family dynamics across distinct social and economic contexts. The classroom portion of the apprenticeship provides the student-apprentices a chance to reflect on—and often write about—their experiences at work, strengthening comprehension and retention.

The apprentices also participate in 2,000 hours of on-the-job learning, mastering a set of competencies designed by the Delaware Valley Association for the Education of Young Children (DVAEYC) and aligned with the teacher quality standards established by the primary early education accrediting body. The on-the-job learning component uses a competency-based curriculum developed by staff from CCP and DVYAEC. They also created a related curriculum for the apprentices' mentors. The apprentices practice organizing fun and substantive learning activities, recognizing when children are struggling or insufficiently challenged, and communicating effectively with parents and caregivers. The mentors learn about coaching methods and observation techniques to help them assess the apprentices and their progress through program.

Box 1.3 Student-apprentice Yesenia Velazquez

Yesenia Velazquez is a student-apprentice in Philadelphia's ECE Apprenticeship Program, which has enrolled more than thirty early childhood education workers across the city. Like many early education workers, Yesenia lacks a college degree, which is limiting her ability to advance in her profession. She is currently a Co-Teacher at a "Discovery Center" in northeast Philadelphia where she grew up. Her goal is to become a "head teacher" and, eventually, a "lead teacher", but those positions require a bachelor's degree. Twenty-nine years old and with two daughters, ages two and nine, Yesenia does not have the time and resources to stop working and go to school fulltime.

The apprenticeship program will allow Yesenia to earn an associate's degree in early education, which she can then use to transfer directly into a bachelor's degree program at Drexel University. All together, the process will take at least four years, but Yesenia feels good about her chances of completing. She had enrolled in college before, right out of high school, but dropped out because "I didn't know why I was there."

This time feels different, in part because she is older and wiser, but also because the program doesn't feel like college as she experienced it the first time around. She's working in the same job, but she now has a mentor, Anju John, with whom she checks in weekly about both work and school. Anju is also 29 and has a master's degree in early education. Yesenia spends the day helping three- and four-year olds expand their vocabulary and learn about letters and numbers, all while providing a caring and nurturing environment. At the same time, she is taking courses at the Community College of Philadelphia, learning alongside other student-apprentices going through the same program. Work and school are connected now, and both make more sense. That is the power of dual education and Degree Apprenticeships.

RECOMMENDATIONS

Expanding apprenticeship into new careers will require stronger connections between our higher education, career-technical, and apprenticeship systems, but not a wholesale reinvention of any of them. A mix of well-targeted policies and investments can foster greater collaboration

across educational institutions, employers, and apprenticeship intermediaries. Below are a series of recommendations that provide a foundation for targeted investment strategies and leverage existing programs and practices to expand apprenticeship into many more parts of our economy.

Connecting Systems

1. Create a special class of student that is also an apprentice and a special class of postsecondary academic degree that includes the core features of apprenticeship, using the following definitions:
 - a. A “student-apprentice” meets the definition of “regular student” as defined by the Higher Education Act, 34 CFR Part 600 and “apprentice” as defined by the National Apprenticeship Act, 29 CFR Part 29.2.
 - b. A “Degree Apprenticeship,” is an apprenticeship program that meets the standards established in the National Apprenticeship Act 29 CFR Part 29.5 and the requirements of a postsecondary degree program as established by the relevant state education agency in the state where the program is delivered.
2. Incorporate the definitions for “student-apprentice” and “Degree Apprenticeships” into:
 - a. Relevant legislation including but not limited to the Higher Education Act, the Carl D. Perkins Career and Technical Education Act, the National Apprenticeship Act, the Trade Assistance Act, and the Workforce Innovation and Opportunity Act.
 - b. Federal and state data dictionaries and data collection systems including, but not limited to, the Common Education Data Standards (CEDS) and the Integrated Postsecondary Education Data Systems (IPEDS).
3. Develop a process for expanding the definition of “Registration Agency” in the National Apprenticeship Act, 29 CFR Part 29 to include state education agencies that meet a set of established criteria. Those criteria should include:
 - a. Formal recognition from the U.S. Secretary of Labor.
 - b. Demonstrated capacity to verify the standards of apprenticeship laid out in the National Apprenticeship Act, 29 CFR Part 29.
 - c. Demonstrated capacity to collect and report performance data on apprentices and apprenticeship programs.

Financing Strategies

4. Create an annual discretionary grant program using H-1B Visa funds to support the development of Degree Apprenticeship programs. Grants will fund partnerships among employers and/or industry associations, institutions of higher education, and other intermediaries as appropriate.
5. Expand and reform the Federal Work-Study program to allow funds to cover the tuition and fees of “student-apprentices” as defined in the earlier section.
6. Integrate apprenticeship into state financial aid and free college programs, adjusting eligibility criteria to include “student-apprentices,” particularly for apprenticeships that address key labor market needs or make college free for adults.

Designing Degrees

7. Engage key stakeholders, including industry and professional associations and accrediting bodies to:
 - a. Design competency-based curricula for the on-the-job learning components of Degree Apprenticeships that can be used across multiple employers and institutions.
 - b. Develop quality principles to guide the development of Degree Apprenticeships in high demand fields, including healthcare and engineering.
8. Create a large, multi-year discretionary grant program in the Higher Education Act to support the development of new degree apprenticeship programs. This program will work with the H-1B funded program at the Department of Labor to support consortiums of colleges, employers, and intermediaries.

Notes

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² Ibid. Survey cited by Jena McGregor, “Apprenticeships, long common in blue-collar industries, are coming to white-collar office work,” *Washington Post*, October 20, 2017.

³ A 2009 survey administered to a representative sample of 974 apprenticeship sponsors found that 54 percent of respondents reported completion rates of 80 percent or better; 44 percent of sponsors estimated completion rates of 90 percent or better. Robert Lerman, Lauren Eyster, and Kate Chambers, *The Benefits and Challenges of Registered Apprenticeship: The Sponsors’ Perspective* (Washington, DC: The Urban Institute, March 2009), 23.

⁴ Thomas Perez and Jeffrey Zientz, “ApprenticeshipUSA is Upskilling America,” The Obama White House Blog, October 21, 2016. <https://obamawhitehouse.archives.gov/blog/2016/10/21/apprenticeshipusa-upskilling-america>.

⁵ Diane Cheng, Debbie Cochrane, and Veronica Gonzalez, *Student Debt and the Class of 2016* (Washington, DC: The Institute for College Access and Success, 2016). In 2014, the Institute for College Access and Success (TICAS) estimated that the overall average debt for all graduating seniors stood at \$29,400, based on the 2012 National Postsecondary Student Aid Survey (NPSAS). TICAS, “Quick Facts about Student Debt,” March 2014. https://ticas.org/sites/default/files/pub_files/Debt_Facts_and_Sources.pdf.

⁶ Fuller, Joseph B and Matthew Sigelman. *Room to Grow: Identifying New Frontiers for Apprenticeships* (Boston, Burning Glass Technologies and Harvard Business School, November 2017).

⁷ Susan Helper, Ryan Noonan, Jessica Nicholson, and David Langdon, *The Benefits and Costs of Apprenticeships: A Business Perspective* (Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, November 2016), 1.

⁸ Malgorzata Kuczera, “Striking the right balance: Costs and benefits of apprenticeship,” *OECD Education Working Papers* 153 (Paris, France: OECD Publishing, 2017). http://www.oecd-ilibrary.org/education/striking-the-right-balance_995fff01-en.

⁹ U.S. Department of Labor Employment and Training Administration, “Registered Apprenticeship National Results FY 2016 (10/01/2015 to 9/30/2016),” October 19, 2017. https://doleta.gov/oa/data_statistics.cfm.

¹⁰ Ibid.

¹¹ Nancy Hoffman and Robert Schwartz, *Gold Standard: The Swiss Vocational Education and Training System* (Washington, DC: The National Center on Education and the Economy, 2015), 8–9.

¹² “Bachelor of Applied Computer Science,” Deutsche Bundesbank. https://www.bundesbank.de/Navigation/EN/Bundesbank/Career/Dual_study_programmes/Bachelor_applied_computer_science/bachelor_applied_computer_science.html.

¹³ Degree Apprenticeships have been available at some universities in the United Kingdom since September 2015. CFE Research, “The Future Growth of Degree-apprenticeships” (London, UK: UK Universities, March 2016), 1.

¹⁴ National Center for Education Statistics, “U.S. Background Information Prepared for the OECD Postsecondary Vocational Education and Training ‘Skills Beyond School’ Study,” U.S. Department of Education, April 2012. <https://nces.ed.gov/surveys/ctes/pdf/PostsecVET.pdf>.

¹⁵ Section 484 of the Higher Education Act of 1965 (20 U.S.C. 1091).

¹⁶ Susan Helper, Ryan Noonan, Jessica Nicholson, and David Langdon, *The Benefits and Costs of Apprenticeships: A Business Perspective* (Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, November 2016), 1.

¹⁷ According to the College Board, projected federal aid expenditures on graduate and undergraduate students in 2016–7 was \$153.9 billion; in 2015–6, it was \$157.4 billion. Sandy Baum, Jennifer Ma, Matea Pender, and Meredith Welch, *Trends in Student Aid 2017* (New York: The College Board, 2017), Table 1, 9.

¹⁸ For the 2017–8 award year. Federal Student Aid, “Federal Student Aid at a Glance: 2017–8,” May 2016, 2. <https://studentaid.ed.gov/sa/sites/default/files/aid-glance-2017-18.pdf>.

¹⁹ Baum, Ma, Pender, and Welch, *Trends in Student Aid 2017*, Table 1, 9.

²⁰ Ibid.

²¹ Sections 441 to 448 of the Higher Education Act of 1965 (42 U.S.C. 2751-2757).

²² U.K. Department for Education, “Apprenticeship funding: how it will work,” July 14, 2017. <https://www.gov.uk/government/publications/apprenticeship-levy-how-it-will-work/apprenticeship-levy-how-it-will-work>. Apprenticeship is a devolved policy in the United Kingdom: While all UK nations pay the levy, each one sets its own rules for spending levy funds. See also Mary Alice McCarthy and Michael Prebil, “How Do We Pay for It? Innovative Approaches to Financing Apprenticeship,” *EdCentral*, April 6, 2017. <https://www.newamerica.org/education-policy/edcentral/innovative-approaches-apprenticeship-financing/>.

²³ IC 22-4-25-1, 2017. <http://iga.in.gov/legislative/laws/2017/ic/titles/022#22-4-25-1>.

²⁴ See, respectively, 1009.25, Fla. Stat. (2017), http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=1000-1099/1009/Sections/1009.25.html; North Carolina S.L. 2016-94-10, <https://www.ncleg.net/sessions/2015/bills/house/html/h1030v8.html>; and WAC 131-28-026, May 6, 2004, <https://www.sbctc.edu/resources/documents/colleges-staff/programs-services/tuition-fees/waivers/tuition-waiver-resolution-04-03-03.pdf>.

²⁵ Kansas Community and Technical College System, “Work Ready Scholarship Program.” <http://workreadykentucky.com/>.

²⁶ Indiana Commission for Higher Education, “Workforce Ready Grant.” <https://www.in.gov/che/4773/htm>.

²⁷ Iris Palmer, “Targeting the Labor Market with Free College,” *EdCentral*, October 18, 2017. <https://www.newamerica.org/education-policy/edcentral/targeting-labor-market-free-college/>.

²⁸ Apprenticeship providers are not required by law to register their programs with the government, and the term “apprenticeship” can be used to describe any variety of programs. We have no reliable estimates of how many apprentices are participating in “unregistered” apprenticeships or even what the category of unregistered program includes. In some cases, employers design apprenticeship programs that meet all or most of the standards laid out in the National Apprenticeship Act but choose not to register them. Toyota is one well-known example. In other cases, like Trunk Club Tech in Chicago, the term “apprentice” refers to what might be simply considered a probationary, on-the-job training program for new hires. <https://techblog.trunkclub.com/tag/apprenticeship/>.

²⁹ Apprenticeships in 25 states are registered with the U.S. Department of Labor’s Office of Apprenticeship. In the remaining 25, a state apprenticeship agency (SAA) assumes this responsibility. See Benjamin Collins, *Apprenticeship in the United States: Frequently Asked Questions* (Washington, DC: Congressional Research Service, August 25, 2015).

³⁰ Elizabeth Blossfield and Don Jergler, “The Hartford Launches Nationally Registered Apprenticeship Program,” featuring interview with John Kinney of The Hartford, *Insurance Journal*, June 8, 2017. <https://www.insurancejournal.com/news/east/2017/06/08/453855.htm>.

³¹ *When institutions do accept learning from outside, it is generally through very proscribed methods such as transfers from similarly accredited colleges and universities, widely recognized exams such as Advancement Placement tests, or recommendations for trusted third parties like the American Council on Education. Some institutions evaluate “prior learning” that a student might have obtained through work or experience, but the practice is not widespread.*

³² For full standards, see 29 C.F.R. 29.5. Standards listed in this report emphasize programmatic aspects. Part 29.5 also includes a number of administrative requirements.



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