

SKILLING UP

The Scope of Modern Apprenticeship



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Foreword

Sarah Rosen Wartell

The apprenticeship movement is reshaping skills, policies, and programs in the United States at a critical moment in our country's history. As technological innovations, demographic shifts, and economic and environmental forces transform how we live and work, the Urban Institute is exploring what it would take to create a future in which everyone has the chance to thrive. What knowledge do we need to enable more workers to develop the skills to succeed in a changing labor market? What would it take to achieve quality jobs for more people? We are asking these bold questions in partnership with today's leading thinkers and doers, and the evidence indicates that apprenticeships hold some of the answers.

Beyond their success in the building trades, apprenticeships are now increasingly recognized as a cost-effective way to create new career pathways and increase economic mobility, all while addressing skill mismatches in the labor market. The Urban Institute is excited to play an integral role in this effort by developing skill frameworks for apprenticeships, undertaking research and evaluation activities, and helping schools and employers bring this globally proven strategy to new industry sectors.

Every day, new apprenticeship programs emerge with bipartisan support from local, state, and national leaders. At Urban, we are eager to work with these changemakers, who share our commitment to evidence-based solutions and exploration—people like Kentucky secretary of education and workforce development Derrick Ramsey. He believes apprenticeships are vital for expanding opportunities for the next generation, and he has worked across government and with the state's businesses and schools to demonstrate that apprenticeship can be a viable recruiting, training, and retention strategy. Organizations like IWSI America do the same. Nicholas Wyman, chief executive officer of IWSI America, is drawing on the successes of the Australian apprenticeship system to help employers set up apprenticeship programs in the US.

These are just two examples of cooperative efforts to strengthen the apprenticeship field. In this volume, you'll learn about the economic returns of apprenticeship programs for youth and employers, engaging the underserved, improving links with education institutions, and new policies for practice and funding.

Skilling Up is a natural title for this joint publication because it highlights how apprenticeship expansions are upgrading worker capabilities, careers, and job quality. Through our work at the Urban Institute and as reflected in this volume, public-private collaboration can not only elevate the debate but yield important practical applications for the country, at a time when they are urgently needed.

Sarah Rosen Wartell is president of the Urban Institute.

1. Introduction

For those of us who developed the concepts and collected the colorful vignettes and chapters included here, the collection represents a treasure trove of knowledge and experiences for employers, educators, parents, policymakers, and others seeking to understand and use modern apprenticeships. This collection offers a chorus of voices emanating from different countries and populations, echoing commitment to bright, sustainable workforce futures through a well-crafted approach to this talent development model. The collection answers questions posed to us over several years by businesses of all sizes, community-based organizations, and schools looking for a way to build strong pipelines of skilled labor, stimulate economies in struggling regions, provide options for adults seeking career changes, and stimulate engagement for students filled with curiosity about the promise of work-based learning. We endeavored to shatter myths, remove barriers, and erase fears of attempting apprenticeship, particularly for small and medium-size businesses and parents who are naturally concerned about meaningful and gainful career choices for their children. This reader intends to show the possibilities modern apprenticeship affords contemporary societies and to inspire many to reframe the boundaries of traditional thinking.

Policymaking can be an important precursor to disrupting well-established societal norms but cannot make any significant impact without the passion and commitment of the people it touches. Many of the chapters and vignettes are emblematic of this process. As articulated throughout the reader, policymakers are offering up legislation and initiatives to generate interest and facilitate the implementation of modern apprenticeship programs. But modern apprenticeship is mainly picking up steam because of the evolutionary employers and apprentices who embrace, engage, and enjoy the work they do. The vignettes, in particular, drive the argument that middle- and high-skill apprenticeships present opportunities that defy the concept of traditional apprenticeships and further fuel innovation. From beekeepers whose scientific techniques protect our food supply, to mental health practitioners serving remote indigenous communities in need of essential services, to veterans finding meaningful employment in agricultural science and environmental preservation, to diverse young people working in the oil and gas industry, all are modern apprenticeships destined to shatter myths and beg replication.

Apprenticeships have stood the test of time, proven their malleability, deflected partisan politics, and enhanced economies. The successes and possibilities discussed here deserve your time. How will you use modern apprenticeship?

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2. Economy and Business

As Earl Anthony Wayne, Emma Sarfity, Grecia De La O Abarca, and Raquel Chuavffet Godinez describe in “Apprenticeships and Other Work-Based Learning Programs across North America,” the Fourth Industrial Revolution will dramatically change the workplace as new technology redefines job skills. Given the linked nature of the three economies in Canada, the United States, and Mexico, the gap between the skills employers need and the skills workers have will widen and negatively affect the region’s competitiveness unless these countries collaborate on a broad approach to workforce development. In the past few years, all three governments have supported apprenticeships and other work-based learning programs. The impact of these programs could be amplified by cooperative efforts across borders to develop common definitions, guidelines and standards, marketing initiatives, and other elements to ensure consistency in implementation.

With the robust efforts to expand apprenticeships and other work-based learning programs across North America, there needs to be a check on issues associated with quality and quantity. Olly Newton, in “English Apprenticeships: Striking the Right Balance between Quality and Quantity,” not only offers insights on the trends of England’s apprenticeship starts over the past few years and its approach relative to other countries, but provides “case studies of excellent practices” on programs that have created positive outcomes for employers and apprentices alike. Also of note is the author’s discussion on using analytical tools to influence the quality and breadth of apprenticeship programs, directing businesses toward developing curricula that sustain and enhance their workforce (an expansive framework) rather than fill production gaps (a restrictive framework).

What is the bottom line of apprenticeship programs for apprentices, employers, and society at large? Deborah Reed sums up estimates of impacts on apprentices based on an empirical study of 10 states in the US. Robert I. Lerman incorporates evidence on the economic returns to apprentices in Washington State and in selected other countries. Lerman then examines the economics of apprenticeships from a business perspective. In “Returns from Apprenticeship Training to Employers: What Factors Make a Difference?” Lerman uses studies in Switzerland and Germany to provide a thorough and empirical overview of the costs and benefits associated with apprenticeship. He also cites studies from the United Kingdom, Australia, and the United States. He further estimates the posttraining benefits of apprenticeships—namely, recruitment and training costs and innovation. Lerman articulates how apprenticeship can increase profitability for individual businesses and suggests solutions for overcoming obstacles to developing and sustaining large-scale apprenticeship training programs.

In “Collaborating on Implementing Apprenticeships: Promises, Challenges, and Solutions for Managing Networks,” Johann Fortwengel offers a helping hand to small- and medium-size enterprises that want to engage in apprenticeships but are daunted by resources and staffing associated with program design, recruitment, implementation, and quality control. Fortwengel discusses the formation

and use of interorganizational networks, often called intermediaries, to address these issues, specifically their promises and challenges. He also offers advice on the implementation of interorganizational networks, advice that has implications for both businesses and policymakers.

Katie Adams states in “Apprenticeship in the Transportation, Distribution and Logistics Sector” that the TDL sector “represents our country’s economic backbone but remains a hidden hub of innovation and employment.” E-commerce is changing how retail and wholesale do business, and the TDL industry cannot meet employers’ needs for skilled workers. The industry faces challenges generating interest among young adults to keep up with advanced technology associated with heavy-duty trucks on the highway, reimagined delivery systems, and the evolving warehouse workspace. Adams advocates that the apprenticeship model provide a customized talent development model that is lucrative for employers and attractive to recruits in the TDL industry.

Apprenticeship and Other Work-Based Learning Programs

Earl Anthony Wayne, Emma Sarfity, Grecia De La O Abarca, and Raquel Chuayffet Godinez

The “Fourth Industrial Revolution” will dramatically change future workplaces as new technology redefines necessary job skills. Apprenticeship programs should be a key part of training tomorrow’s workers.

Given the commercial and production integration across North America, the United States, Canada, and Mexico should collaborate to develop a new framework that strengthens workforces and embodies best practices in apprenticeship programs to bring adequately skilled workers into rapidly changing economic sectors.

According to Manpower’s 2018 talent shortage survey, 50 percent of Mexican employers, 46 percent of US employers, and 41 percent of Canadian employers are having difficulty finding suitable candidates to fill jobs (ManpowerGroup 2018). Employers from these North American economies report three main difficulties: (1) the lack of applicants, (2) lack of “hard” (technical) skills and “soft” (human or social) skills; and (3) lack of experience.

These skills gaps or mismatches could widen as new technology surges through workplaces. The World Economic Forum 2018 *Future of Jobs* report suggests that 54 percent of workers will require reskilling (for people displaced from jobs) or upskilling (for people still employed but whose jobs are evolving) over the next five years (Leopold, Ratcheva, and Zahidi 2018). According to a study by the National Skills Coalition, 53 percent of US jobs require more training than a high school diploma but do not require a four-year college degree (Johnson and Spiker 2018). But the study reports that only 43 percent of US workers are trained at this level, making upskilling and reskilling imperative (Johnson and Spiker 2018). The US Bureau of Labor Statistics predicts that 1.37 million US workers will be displaced in the next decade, requiring wholesale reskilling (Hadzilacos et al. 2019), while Deloitte argues that 47 percent of today’s jobs might be gone in the next decade (Giffi et al. 2018). Deloitte also found that the skill shortages over the next decade could cost the US economy \$2.5 trillion in lost output.¹ The Organisation for Economic Co-operation and Development (OECD) estimates that 14 percent of jobs across its member countries could disappear because of automation in the next 15 to 20 years and another 32 percent are likely to change radically (OECD 2019).

Expanding Apprenticeships and Other Types of Work-Based Learning and Technical Education, Including Internships, Mentorships, and Midcareer Learning

Work-based or work-integrated learning programs, such as apprenticeships, can help address these needs. Apprenticeship programs can help match the demand and supply of skills and jobs. The mix of academic instruction and on-the-job learning helps people develop relevant capabilities—both hard and soft skills—to meet current and future labor market demands and provides businesses the trained employees they need. These learning programs have positive impacts on the economy, as they facilitate the transition from school to the labor market, foster productivity, lead to higher wages, and facilitate the pursuit of higher education among workers who want to advance their careers (Alden and Taylor-Kate 2018).

Apprenticeship programs address the skills gap because they immediately place workers in unfilled jobs, and the companies offering the apprenticeships can adjust their training to fit current organizational needs (Johnson and Spiker 2018). Work-based learning also provides an on-ramp to a career by immediately offering workers paying jobs and certifications that can help them develop marketable skills (Johnson and Spiker 2018). Furthermore, the National Skills Coalition emphasizes the importance of preapprenticeship or preemployment programs to provide foundational math and technical skills as well as career coaching to people looking to access apprenticeships. The National Skills Coalition recommends these programs be implemented to expand apprenticeship opportunities and education to traditionally underrepresented populations (Johnson and Spiker 2018). Postsecondary education can be enormously beneficial: the pursuit of short-term credentials at community and technical colleges in the United States is estimated to increase earnings 30 percent or more compared with a high school diploma (National Skills Coalition, n.d.).

Apprenticeship and other work-based learning, however, will need to evolve and adapt to the pace of technological change and workplace needs. This will be especially evident if companies and economies move away from front-loaded education to a model where skills are continuously updated during a working life to match changes in job skill needs (OECD 2019).

Despite the advantages and benefits of work-based learning programs, they remain a second choice for many young people and parents in North America, as the National Association of Manufacturers found in a survey. Negative stereotypes persist regarding vocational education, reducing the potential benefits of such programs and harming the economy.²

There are, however, pathways through which young people can demonstrate career readiness to employers, such as ACT's National Career Readiness Certificate. In association with the National Association of Manufacturers, ACT developed this portable credential that certifies that a person has

skills needed in the workplace.³ Obtaining this credential allows young people to automatically earn some college credits and helps them earn other industry credentials.

On-the-job training can be a robust tool for developing a qualified workforce at many skill levels that fulfills the changing skills required in rapidly evolving workplaces (Alden and Taylor-Kate 2018). On-the-job training benefits both employers and employees and can address both reskilling and upskilling needs. Employers that invest in their workers increase the probability of retaining them, and the workers achieve greater productivity and can better absorb new technologies to the benefit of the firm's bottom line.

In fact, the OECD reports that each year of postsecondary education a worker receives increases per capita income 4 to 7 percent (OECD 2001). In the United States, more than 36 million adults have foundational skills gaps (mostly in literacy or numeracy), but nearly two-thirds of them are currently employed, suggesting an underused group of workers who, if given the opportunity for more education or training, could be more productive (Bergson-Shilcock 2019).

The World Economic Forum argues that a new virtuous cycle that incorporates new technology and trains employees to use it well should become the standard business model, but serious questions remain about how best to provide incentives for businesses to adopt such models (Leopold et al. 2018).

National Apprenticeship Programs in North America

Canada

Canada has 400 trades designated for apprenticeship.⁴ To build a talent pipeline for the skilled trade, the government has committed to developing an apprenticeship strategy to remove barriers to entry and progression to accreditation for skilled trade workers. In the 2019 budget, the government announced new measures, including a campaign to consider training and work in the skilled trades and to develop a new apprenticeship strategy. The budget proposals also include steps to expand opportunities for work-integrated learning opportunities under Canada's Student Work Placement Program (Department of Finance Canada 2019, chapter 1).

To foster a culture of lifelong learning, Canada's 2019 federal budget announced the creation of a personalized, portable training benefit to reduce barriers to adult upskilling (Department of Finance Canada, n.d.). The Canada Training Benefit will help midcareer workers access upskilling opportunities, secure income support during training, and offer job protection while on training leave. Canadian workforce development specialists are hopeful about these investments but highlight the need to measure and examine results.⁵

Mexico

In 2019, the Mexican president and the secretary of labor and social welfare started Youth Building the Future, one of the largest apprenticeship and mentoring programs in the world.⁶ The program aims to increase productivity and economic growth by increasing job and training opportunities for 2.3 million 18-to-29-year-olds who are neither studying nor employed.⁷ This program aims to train young people for up to one year with relevant work skills and link them to the private, nonprofit, and public sectors. This initiative gives priority to applicants who live in marginalized areas, with high rates of violence and with a predominantly indigenous population.⁸ Young people who join this program receive a monthly stipend of 3,600 Mexican pesos (around 190 US dollars) and health insurance. At the end of the year, young people will receive a certificate that describes the training they received and the skills they developed, followed by their incorporation into the labor market. Program monitoring will be done through the National Employment Service.⁹

Mexican officials stress that this program represents a significant boost in government investment as a share of gross domestic product.¹⁰ They say they want to strengthen the skills elements in this program and expand that focus to secondary and tertiary education. In addition, a massive Mexican labor reform has recently been approved. Changes to worker and union rights will endorse the development of a collaborative system of upskilling and reskilling workers and increase the country's competitiveness.¹¹ (These efforts should include programs to incorporate skilled migrants returning from the US into Mexico's workforce.) Mexican officials underscore their conviction that thriving economic sectors and value chains remain key for job creation. Experts stress the need to see results, including the skills and competencies obtained, the development of widely recognized certificates, and the employment progression of those completing the mentorship and training year.

United States

Labor unions have historically been a major provider of apprenticeship and on-the-job training programs in the United States. The American Federation of Labor and Congress of Industrial Organizations lists registered apprenticeship programs that provide on-the-job training under the guidance of industry professionals.¹² These training programs are funded through collectively bargained contributions and allow highly skilled workers to learn on the job while earning a family-supporting salary. Furthermore, labor unions promote labor management partnerships to help working people learn in-demand skills. These training programs in the building and construction industries are estimated to contribute about \$1.5 billion to the US economy yearly. US labor unions also offer highly specialized programs that allow workers to receive training while working. These union-based apprenticeship programs have been regulated by the US Department of Labor, which was responsible for registering apprenticeship programs and ensuring that individual programs met federal standards.

Workforce development is an announced priority for the Trump administration, with the active involvement of the president's daughter Ivanka and the Departments of Labor and Commerce. In July

2017, President Trump signed an executive order to expand apprenticeships in America.¹³ This order aims to provide more affordable pathways to secure high-paying jobs by promoting apprenticeships and effective workforce development programs, as well as ease regulatory burden on such programs and reduce or eliminate taxpayer support for ineffective programs. In July 2018, President Trump established the President's National Council for the American Worker.¹⁴ This group is in charge of creating a national strategy to ensure that workers and students are ready to face today's economy and develop recommendations for the president on policy and strategy related to workforce development. The scope of the council's mandate encompasses key issues regarding skills, competencies, and training, and initial recommendations were due in 2019.¹⁵ The council met for the first time in March 2019 and created four working groups to focus on promoting multiple pathways to careers, increasing data transparency, modernizing candidate recruitment, and encouraging more employer-led training.¹⁶ The groups are expected to present their findings and recommendations in September 2019.

As part of the National Council for the American Worker, the Trump administration is asking companies to sign a Pledge to America's Workers. More than 200 companies and associations have committed to creating new education and training opportunities over the next five years, some of which will be apprenticeships.¹⁷ The Trump administration aims to facilitate the creation of at least 6.5 million training opportunities—including apprenticeships and work-based learning, continuing education, on-the-job training, and reskilling—for American workers from high school through retirement. Observers note the need to measure and analyze the results of this largely voluntary program, especially given that some of the programs were likely already planned and will likely reflect a range of standards and guidelines.

The US Department of Labor proposed an Industry-Recognized Apprenticeship Program on June 24, 2019.¹⁸ As part of this initiative, the Trump administration and the Department of Labor introduced a new rule that allows apprenticeships to be registered and regulated by business associations, unions, and other private entities. The rule would allow the Department of Labor to certify these private organizations as standards recognition entities, which would be responsible for certifying and regulating the Industry-Recognized Apprenticeship Program.¹⁹

The new rule would reduce Department of Labor oversight of apprenticeship programs, transferring this responsibility to private entities. The Trump administration argues that allowing business groups to run apprenticeship programs will expand access to these programs and would permit the standards recognition entities to more quickly adapt the programs to workers' needs.²⁰ Before this rule can be implemented, it must undergo a 60-day public comment period, which will end on August 26, 2019.²¹

(As of this writing, the tens of thousands of comments the Department of Labor received on the proposed apprenticeship rule appeared to be largely from union members who were concerned about the quality of oversight that would be provided by the proposed new standards recognition entities, and who expressed their preference for union-run apprenticeship programs and continued oversight by the

Department of Labor. The final rule has yet to be issued, though with such negative comments, modifications or delays are possible.)

In conjunction with this program, the Department of Labor announced that it intends to devote \$183.8 million to expand apprenticeship programs implemented by university-industry partnerships. The department has allocated an additional \$100 million to develop more apprenticeship programs and close the skills gap.²²

Other Career and Technical Education Programs

United States

The three North American economies have increased their interest and investment in career and technical education (CTE). In many US states, CTE has become a policy priority. Colorado, Kentucky, Michigan, Nevada, Tennessee, Washington, and Wisconsin have increased funding for CTE programs, including money to upgrade equipment and improve career counseling (ACTE and Advance CTE, n.d.). The US federal government has called for the expansion of apprenticeships and vocational education as a policy priority²³ and received recommendations on ways to promote apprenticeships (TFAE 2018).

Mexico

Mexico is also moving forward with CTE implementation and expansion. In 2013, Mexico's secretary of public education—in partnership with the Mexican-German Chamber of Commerce and Industry and the Confederation of Employers of the Mexican Republic—created the Mexican Dual System of Vocational Education. The model follows a three-pronged approach, in which governments, educational institutions, and industry play important roles.²⁴ Another effort, the National College of Technical Professional Education, is a federal institution that provides technical education across all states in Mexico, following the dual educational approach.²⁵

Canada

In Canada, the Red Seal Program is a long-standing federal-provincial-territorial partnership that develops common national standards and examinations for the Red Seal trades.²⁶ The federal government, provinces, and territories have been working with industry to harmonize apprenticeship training and align apprenticeship systems, as the provinces and territories are responsible for apprenticeship training and trade certification.²⁷ Another example of how technical education has proliferated in Canada is the emergence of a third pillar of postsecondary education, alongside universities and community colleges: polytechnics. Polytechnics offer industry-aligned technical and

technological training across several credentials, from four-year bachelor's degrees to apprenticeships in the skilled trades. Canadian polytechnics combine academic education with a broad range of experiential learning opportunities focused on developing skills and applying technology, delivered via robust relationships with industry associations and employers of all sizes.²⁸

Private-Sector Initiatives

Several large companies are leading the effort in North America. Walmart, for example, launched Walmart Academies in 2016, which now operates more than 200 training academies where more than 500,000 workers have been trained since the program's launch. The two-to-six-week training program provides workers advanced retail, technical, and digital skills.²⁹ Amazon's Career Choice Program also gives employees the opportunity to learn new skills and advance in their careers. The company pays 95 percent of the fees for their workers to get a certificate or diploma in qualified or in-demand careers, such as transportation, information technology and computer science, mechanical and skilled trades, and health care. To provide incentives for worker participation, Amazon holds the training in classrooms at Amazon's facilities.³⁰ Amazon recently announced that its intention to spend an additional \$700 million to retrain one-third of its US workforce to adapt to the increasing technological changes facing the industry. This upskilling and reskilling effort is expected to include 100,000 workers by 2025.³¹ The shelf life of training is likely to continue to shrink, making continual upskilling critical.

Siemens launched an extensive apprenticeship program in Charlotte, North Carolina. This program gives participants an international industry certification, an associate's degree, and an apprenticeship completion certificate. The trainees graduate without debt and with a guaranteed job at Siemens earning \$55,000 a year. The company designed this on-the-job training program with community colleges in Charlotte and has worked with other large companies and the Department of Labor to develop a model for other manufacturers interested in creating similar programs.³²

Furthermore, US business groups are promoting technical education to ensure a supply of highly skilled manufacturing workers. The National Association of Manufacturers launched a program in 2019 called Creators Wanted, which allocates \$10 million to altering the public's perceptions regarding technical education.³³ A study launched by the association found that only 27 percent of US parents would encourage their children to pursue manufacturing as a career. The Creators Wanted program aims to increase that number to 50 percent by 2025 by showing the importance of cutting-edge manufacturing to technical innovations. In changing the public's attitudes toward manufacturing, the association hopes to narrow the skills gap by 600,000 workers by the end of 2025 and increase the number of students enrolling in technical and vocational schools by 25 percent.³⁴

Another business group, the Business Roundtable, introduced the Workforce Partnership Initiative in June 2018. In this program, chief executive officers of major corporations partner with educational institutions and community leaders to augment essential workforce readiness skills; increase science,

technology, engineering, and mathematics skills among workers; boost the number of workers with specialized skills, and educate, train, and employ traditionally underrepresented populations.³⁵ This partnership has programs under way in 10 regions. In August 2019, the Business Roundtable released a new statement on the purpose of a corporation, signed by 181 chief executive officers, that commits companies to “supporting [employees] through training and education that help develop new skills for a rapidly changing world,” among other pledges.³⁶

But as a 2018 Accenture study highlights, most companies have not yet accepted the value proposition of midcareer on-the-job training. Accenture argues that such programs are going to be more important than ever in the years ahead (Shook and Knickrehm 2018). Though the costs of upskilling and reskilling programs are often prohibitive for small and midsize businesses, the National Skills Coalition says that industry or sector partnerships with workforce stakeholders can allow smaller organizations to reap the benefits of training programs (Spiker 2019). Because the shelf life of training is likely to continue to shrink, continual upskilling by all types of companies and stakeholders will be critical.

Learning from Other Countries

Despite progress on recognizing the value of apprenticeships and on-the-job learning and training, more needs to be done. North America can learn from best practices and lessons from other countries, such as Austria, Germany, Switzerland, and the UK and from US, Mexican, and Canadian states and provinces that have successful pilots or systems in place.

Experts recommend that the development, implementation, evaluation, and assessment of workforce development programs require agreement on a clear definition of program goals, standards, and minimum criteria so programs and credentials are comparable across each country and across North America, which can be especially important for specific industry sectors. That is not yet the case, despite the integration of continental production networks.

Next Steps

Building from the broad agreement to promote work-based learning, a study prepared at the Wilson Center, *A North American Workforce Agenda*, recommends steps to develop further cooperation between Mexico, Canada, and the United States to promote apprenticeship and other work-based learning programs (Wayne and Chuayffet, n.d.). These include moving to trilateral agreement on the following:

1. A definition of modern apprenticeships, definitions for other work-based learning systems, and minimum criteria and quality standards of such programs, which will affect funding decisions (Wyman, Yates, and Whatmore, n.d.).³⁷

- » The agreement should leave enough flexibility to adapt to national, regional, and local demands while incorporating economic and technological changes and providing a sense of common professional skills attributes among graduates.
2. Broad guidelines in North America on assigning roles and responsibilities to governments, industry, and intermediaries regarding the development, implementation, and funding of apprenticeships, as well as other widely used models for work-based learning.
 3. Building a trilateral CTE and apprenticeships task force to identify best practices and strategies to promote apprenticeships and other work-based learning programs. Working experience is also valuable for people in higher education, as many successful programs demonstrate. The task force should consider the range of work-based learning programs, including how they should embrace needs for reskilling and upskilling workers.
 4. Elements of a marketing strategy to increase public, especially youth, awareness of the benefits and advantages of work-based learning to change negative public misperceptions of such programs and reduce negative stereotypes of vocational education and careers. Top-level officials must be engaged in the work.
 5. Trilateral spaces to foster dialogue between stakeholders across the region to share best practices on work-based learning and training and to strengthen public-private partnerships.
 6. Ways to encourage and support companies (and including standards recognition entities when they emerge in the US) to develop training and learning programs for reskilling and upskilling their workforces. This effort should highlight the value and need of new work-based training models to keep up with the evolution of technology and job content. Part of the agenda should be creating industry-academia dialogue platforms within and across countries that are more than one-off events and that become part of the workforce ecosystem. Small and medium-size enterprises will merit special attention in this process to help them participate fully in apprenticeship and other work-based learning programs.

Should these measures be implemented, the coming Fourth Industrial Revolution would pose less of a challenge for North America's workers and businesses and would help all three countries manage the transition to the future of work in ways that reduce the negative social and economic effects that many worry could accompany these transitions. Furthermore, doing so on a North American scale would help ensure the future competitiveness of the three countries, whose economies are closely linked.

Apprenticeships and work-based learning programs should be key elements to upskill or reskill the working population and to address the gaps and the skill mismatches employers may face as new workers enter the marketplace. Employers, academic institutions, intermediaries, and government must be key players in the evolution of best practices confronting the changes being wrought by new technologies.

Apprenticeships and other work-based learning constitute an integral part of a broader workforce development agenda, which is needed to address the challenges posed by the increasing technical changes being made to global industries and economies and to our societies.

Notes

- ¹ We could not locate similar information for Canada and Mexico, which points to the value of developing a shared or common process to collect and share such data.
- ² Kelly Field, “Why Are Women Still Choosing the Lowest-Paying Jobs,” *The Atlantic*, January 25, 2018, <https://www.theatlantic.com/education/archive/2018/01/why-are-women-still-choosing-the-lowest-paying-jobs/551414/>.
- ³ “The National Career Readiness Certificate,” ACT, accessed September 9, 2019, <http://www.act.org/content/act/en/products-and-services/workkeys-for-educators/ncrc.html>.
- ⁴ “Hiring and Training Apprentices,” Government of Canada, last updated August 28, 2019, <https://www.canada.ca/en/employment-social-development/services/apprentices/hire-train.html>; and “Trends in Canada,” Red Seal Program, last updated February 22, 2018, http://www.red-seal.ca/trades/tr.1d.2s_c.1n.1d.1-eng.html.
- ⁵ Canada’s 2019 federal budget has also introduced substantial investments and initiatives to address current and future workforce challenges, including the following: (1) the creation of the Canada Training Benefit to help Canadians with the costs of training fees (\$1.7 billion over five years and \$586.5 million a year ongoing); (2) the expansion of the Student Work Placement Program to provide students access to work-integrated learning opportunities in all disciplines (\$631.2 million over five years); (3) the development of partnerships with innovative businesses to create more work-integrated learning opportunities (\$150.0 million over four years); (4) support for the Business/Higher Education Roundtable (\$17 million over three years) as it forges partnerships for work-integrated learning opportunities; (5) the expansion of the Canada Service Corps youth service program (\$314.8 million over five years and \$83.8 million a year ongoing); (6) the development of an outbound student mobility program, on a pilot basis, to help Canadian postsecondary students gain skills to succeed in a global economy (part of an investment in international education: \$147.9 million over five years, starting in 2019–20, and \$8.0 million a year ongoing); and (7) the development of an apprenticeship strategy and investments in organizations such as Skills Canada, focused on promoting skilled trades and technologies. For more, see Department of Finance Canada (2019).
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Returns from Apprenticeship Training to Employers: What Factors Make a Difference?

Robert I. Lerman

Economists have long believed firms will not pay to develop occupational skills that workers could use in other, often competing, firms. Researchers now recognize that firms that invest in apprenticeship training generally reap good returns. Financial returns to firms vary. Some recoup their investment within the apprenticeship period, while others see their investment pay off only after accounting for reduced turnover, recruitment, and initial training costs. Two key factors affect employer returns: whether the public sector offsets the costs of education and training off the job, and how much apprentices add value to the organization during the training period. Most participating firms view apprenticeships as offering certainty that all workers have the same high level of expertise and ensuring an adequate supply of well-trained workers to cover sudden increases in demand and to fill leadership positions.

Policymakers are searching for ways to stop the erosion of middle-class jobs, to increase productivity, and to reduce youth joblessness. Some countries face a youth employment crisis that could lead to a “scarred” generation facing long periods of unemployment and weak earnings prospects. Only 42 percent of 15-to-24-year-olds in the Organisation for Economic Co-operation and Development (OECD) were employed in late 2018. In France, fewer than one in three young people held jobs. The situation was even worse in Spain and Italy, where only 20 percent were employed. In contrast, 63 percent of young people in Switzerland, where apprenticeships are most common, have paid employment.¹

Although youth joblessness remains high and middle-skill jobs are declining, employers in many industries are complaining about a mismatch between the skills they want and the skills job applicants possess. Given how well countries with robust apprenticeship systems have reduced youth unemployment, raised the status of middle-wage jobs, and limited skill shortages, the OECD and the European Union have called for major expansions of these programs. In the US, the primary barrier to expansion is the limited number of employer-sponsored apprenticeship positions. One reason is limited knowledge about why apprenticeships make sense and about how to create programs. But a second reason is the perceived high net costs and risks of low financial returns to employers. This chapter examines the returns on investment in apprenticeship and shows that firms often reap positive net benefits from well-structured apprenticeship programs.

Understanding the Firm's Perspective: The Theory

Developing, producing, and selling goods and services in today's competitive economy requires high quality and low production costs. Success is far from assured, as revealed by the ups and downs firms experience in their sales and profits and by frequent bankruptcies. Companies rarely place workforce issues at the top of their agenda as they worry about other issues: Where are sales coming from? Will we produce too few goods and services or too many? What are the legal and regulatory hurdles we must overcome? Companies consider how many people to hire at various salaries and employee benefits and for various positions. In doing so, employers typically hire workers who fit their mix of occupational demands. Employers are viewed as "wage takers" in that they cannot pay less than the going wage for a specific skill.

Like investments in plant and equipment, increasing workers' skills requires spending today to generate future returns in enhanced productivity. Additional firm-specific skills can increase a worker's productivity only within the firm that provides the training, but additional general skills can increase productivity in other firms. Labor economists have theorized that firms are likely to pay only to develop workers' specific skills because the gains from general skills will accrue to the worker through higher wages from the training firm or some other firm.

Because the theory applies to all profit-seeking firms and workers, one would expect to find similar patterns of firm-based training investments across countries. But the patterns vary widely. Employers in some countries provide little occupational training, while employers in other countries undertake extensive general training for workers to gain occupational qualifications that can be used outside the firm. Employers supply enough apprenticeship training (which involves substantial general training) to reach two-thirds of youth in Switzerland and more than half in Germany (Steedman 2010) but only about 2 percent of US youth.

Amendments to this theory, however, suggest that employers do have an incentive to finance general training. Partly, this is because it is costly for workers to quit and for employers to replace them. Also, firms providing the training know more than other firms about the content and value of training and how well workers absorb the knowledge. Offers of training are effective recruitment tools, partly because training offers generally appeal to the most capable and motivated workers. And specific and general skills are often complementary. The more general skills a worker possesses (including occupational skills), the more productive that worker is likely to be after acquiring firm-specific skills.

Skills rarely increase productivity in isolation, however. These increases typically result when workers use their skills to complement the work of others within the organization. Economic theories have offered useful conceptual frameworks, but determining whether firms benefit from apprenticeship investments requires empirical estimates.

Assessing the Costs and Benefits of Apprenticeship Training to Employers

What are the economics of apprenticeship from the standpoint of firms? What are the estimates of economic returns to employers when applying standard investment tools? Like most investments, apprenticeship investments require up-front costs but yield a flow of future gains over subsequent years. The employers' main costs include the following:

- wages and benefits of apprentices plus any payroll taxes
- wages, benefits, and payroll taxes paid for the time trainers and other staff devote to the apprenticeship program
- use of materials and equipment
- costs of setting up the apprenticeship
- recruiting and selecting apprentices
- employer contributions to the costs of classroom training

The main benefits for employers include the following:

- added production value contributed by the apprentices
- reduced recruitment and training costs
- ability to pay slightly less than the worker's productivity as a fully trained worker because of the worker's familiarity with the firm and the worker's training and knowledge of the intricacies of the firm's technologies and social interactions
- reduced risk of not finding adequately and specifically skilled workers to replace retirees and others leaving the firm
- option value of extra skilled workers that the firm trained on its own
- gains in innovation accruing from the apprentice's in-depth understanding of the work processes within the firm and the quality of training

Costs vary between countries depending on whether employers bear most or all of the costs of the off-job instruction related to the apprenticeship. In Germany and Switzerland, where apprenticeships begin during high school, governments generally pay for the off-job component because high school is generally an entitlement. Typically, wage costs are also lower when apprenticeships begin at an early age. Governments may or may not fund off-job training for older apprentices.

The benefits depend significantly on the hours apprentices spend on tasks that would otherwise be performed by unskilled and skilled workers and on the productivity of apprentices relative to unskilled and skilled workers. Benefits also arise from savings on subsequent hiring and training costs and lower turnover costs (Gambin, Hasluck, and Hogarth 2010). Also valuable is employers' increased certainty

that apprenticeship graduates know all relevant occupational and firm-specific skills and can work well alongside other skilled workers. In addition, having extra well-trained workers, such as apprentice graduates, provides firms valuable options for expanding production without reducing quality in response to uncertain demand shocks and options for covering unexpected absences of skilled workers (Lerman 2013). The high level of occupational mastery apprentices achieve may also increase the pace of innovation and the ease of implementing new technologies.

Empirical Analyses of Apprenticeship Costs and Benefits

It would take years, if not decades, to track all the costs and benefits of apprenticeships in a large sample of employers and countries. Studies have not been able to quantify all the benefits that accrue to employers years after the apprenticeship. Although some evidence is available in select countries, detailed data from representative and large samples have been collected only in Germany and Switzerland.

The German data are based on 2,424 interviews with employers in 2000 and 2,986 interviews in 2007 (Muehleemann and Wolter 2014). Information on Swiss apprenticeships come from 2,300 to 2,400 mail surveys undertaken in 2000, 2004, and 2009. The data cover the wages of management and training personnel, wages of regular skilled and unskilled workers, wage costs of apprentices, time at the workplace, share of apprentices' workplace time devoted to tasks normally undertaken by unskilled and skilled workers, and the relative productivity of apprentices compared with regular workers.

Apprenticeships differ in costs and in the share of salaries offset by the apprentice's contribution to production. The data from the 2000 surveys show gross yearly annual costs of €15,500 for German firms and €18,000 for Swiss firms (Wolter and Ryan 2011). Although Swiss firms spent more, they derived substantially higher benefits from the value apprentices added. Swiss firms gained more than €19,000 a year, more than double the €8,000 a year German firms attributed to the production value apprentices generated. For a three-year apprenticeship, Swiss firms were thus able to recoup the €54,400 cost with €57,100 in benefits, while German firms experience a €46,600 cost but realize only €24,000 in benefits.

The higher Swiss costs were offset by higher returns for several reasons. First, apprentices were at work for more days, an average of 468 days in Switzerland for a three-year apprenticeship, compared with 415 for their German counterparts. Second, when in the workplaces, Swiss apprentices devote an average of 83 percent of their time to productive tasks, compared with only 57 percent for German apprentices, who engage more in practicing tasks and in coursework. Third, the differences in time spent on tasks with no direct value to the firm are substantial. In Switzerland, apprentices allocate only 13 to 21 percent of their time to these tasks, while in Germany, these tasks take up 31 to 57 percent of the time.

One striking feature of apprenticeship programs in both countries is how quickly apprentices advance through their training and move from unskilled to skilled tasks. In Switzerland, the productivity of apprentices rose from 37 percent of a skilled worker's level in the first year to 75 percent in the third (final) year (Wolter and Ryan 2011). The increase in Germany was just as rapid, increasing from 30 percent of a skilled worker's productivity to 68 percent over the apprenticeship period. In both countries, apprentices accumulate substantial and similar levels of human capital. Still, 93 percent of German firms with apprenticeships incurred net costs, while 60 percent of Swiss firms more than recouped their costs.

As of 2000, the higher in-program net costs borne by German firms were offset by higher retention of apprentices within the firm. In Switzerland, only 36 percent of apprentices remained with the firm that provided the apprenticeship training. In the former West Germany, the corresponding figure was 64 percent (Wolter and Ryan 2011). Though German firms bore higher net costs than Swiss firms during the apprenticeship period, they were more likely to recoup these costs by retaining the workers they trained. The German labor market embodies more regulation than does the Swiss labor market. In Germany, unions are stronger, laying off workers is more difficult, and works councils do more to influence the training of young workers.

After 2003, as Germany implemented labor market reforms to increase flexibility, recouping in-program costs through higher retention became more difficult. German firms might have responded by reducing their use of apprenticeship. Instead, they adapted to the reforms by increasing apprentice involvement in production (Jansen et al. 2015). Average net costs declined 36 percent, and the share of firms with net benefits during the apprenticeship rose from 10 percent to 30 percent. These employer reactions demonstrated the importance of apprentices' high productivity during the training period. Apprentice retention remained high, at more than 50 percent. With the cost of recruiting a skilled worker estimated at twice the monthly pay for a similar worker, high retention of apprentices completing their program is a critical benefit.

A separate study of apprenticeships in 100 German firms used a tool called QEK ("quality, returns, and costs") that allowed employers to make detailed assessments of the costs and benefits of apprenticeship during the training period. The results suggest that most firms recoup their investments (Rauner et al. 2010). But the net costs vary, with some firms gaining more than €10,000 and others experiencing net costs. Somewhat surprisingly, net costs are inversely related to apprenticeship quality. High-quality apprenticeships have higher gross costs, but they are more likely to help employers recoup their investment during the training period.

Costs and Benefits outside Germany and Switzerland

Estimates of net costs of apprenticeship investments that are based on large, representative samples of employers are less common outside Germany and Switzerland. An extensive study of Canadian

employers sponsored by the Canadian Apprenticeship Forum (2006) estimated employer costs and benefits of apprenticeships in 15 occupations. The study drew on responses from 433 employers, with at least 16 per occupation. All of them were four-year apprenticeships. The average gross costs ranged from about C\$78,000 for cooks to C\$275,000 for construction electricians. Average in-program benefits—measured as the revenue apprentices generated—varied as well, ranging from C\$120,000 for cooks to C\$338,000 for construction electricians. For all 15 occupations, employers earned a positive return on their apprenticeship investments during the training period. The average benefit was 1.38 times the average cost. Any postprogram benefits would add to the economic returns.

An analysis of apprenticeships in the United Kingdom examined the returns to eight employers in engineering, construction, retail, and business administration (Gambin, Hasluck, and Hogarth 2010). Training ranged from 18 months for basic credentials to two to four years for advanced programs. Average gross costs were higher than the average benefits during the apprenticeship period in all four industries, with magnitudes varying by industry. Apprenticeships were most costly in engineering and construction, even though apprentices' productive contributions were worth about 50 percent of a fully qualified worker's wage. The dollar value of an apprentice's contribution to output is high, but so are the wages. Still, the authors estimate that employers in all four industries at least break even and begin earning positive returns during the early postapprenticeship period, partly because the productive contributions of apprenticeship graduates were worth more than their wages at the time and partly because of lower recruitment and training costs.

A study of 60 employers in Australia in 1998 and 1999 found that net costs over a four-year apprenticeship were nearly 1.4 times the benefits (Dockery et al. 2001). But net costs declined over time. By the fourth year, the benefits exceeded costs. Although this analysis did not estimate the postapprenticeship benefits that accrued to employers, the trend in increased productivity suggests that employers might have reached a break-even point by the sixth or seventh year, after factoring in reduced recruitment and training costs.

A 2016 study in the US offered qualitative and limited quantitative evidence on net costs of 13 apprenticeship programs (Helper et al. 2016). Employers in all 13 programs reported their apprenticeship program was beneficial to the company, but only 4 had data to document positive returns. Examining two employers' experiences, the study found that the costs were often offset by idiosyncratic benefits not easily captured in standardized questionnaires. For example, at Dartmouth-Hitchcock Health Centers in New Hampshire, the costs of the medical assistant apprenticeship program were offset by the reduction in overtime costs (saving \$48,000 per apprentice) and the increases in appointment bookings (adding \$7,000 in revenue). In addition, the program likely lowered turnover among doctors by relieving them of tedious paperwork tasks, saving substantial sums. With apprenticeship costs of only \$22,200 per apprentice, the health facility generated an estimated 40 percent return on the investment in apprenticeships.

Siemens USA's experience shows that even a high-cost apprenticeship can yield high returns (Helper et al. 2016). The Siemens program trained apprentice mechanics, helping them acquire detailed knowledge of theory, machine programming, tool design, and metallurgy. The firm had trouble finding enough qualified mechanics and decided to participate in North Carolina's Apprenticeship 2000 consortium. As the program proceeded, apprentices learned to program computers to machine a part, identify and correct coding errors, and know how the code will generate the manufactured part. The costs over the program's four or more years amounted to \$187,000, almost all of which were the wages of apprentices and mentors. But absent the program, Siemens would have filled positions to perform work that apprentices undertook instead. Even a low-experience worker would have cost \$56,000 over the apprenticeship period. The study found several benefits. Relative to hiring a machinist from the labor market, apprentices were less likely to be late, were more productive, and had a wider range of knowledge that yielded significant flexibility. The study noted that apprenticeship graduates could work on almost any machine and were particularly capable at repairing generators and turbines. The impact of these enhanced skills on increasing capacity utilization meant the apprenticeships yielded an internal rate of return of at least 50 percent.

A third company described in the report, Oberg Industries, is a contract precision manufacturer in Pennsylvania. The company has sponsored apprenticeship in many occupations, including CNC operators, CAD die designers, and precision machining specialists. It has graduated almost 700 apprentices. The investment in apprentices is significant, averaging up to \$250,000 for a four-year apprenticeship. But detailed studies undertaken by Oberg find that gains indicate that the return on investment turns positive by the midpoint of the apprenticeship and increases during the final year.

Studies of the net costs to firms during the apprenticeship period indicate wide variation across countries, occupations, and time. Central to firms' ability to recoup most or all of their training costs is the amount of time apprentices spend in directly productive activities. Swiss firms are particularly effective at combining major investments in apprenticeship training with extensive use of apprentices in production. Given such low net costs (or even small net benefits), apprenticeships can be valuable to firms even if they retain fewer than half their graduates. Most firms view their investments in apprenticeship programs as critical to their long-term success in producing high-quality goods and services.

Estimating the Posttraining Benefits of Apprenticeships

The posttraining benefits of apprenticeship programs are especially important, but they are not easy to quantify. They include the following:

- reduced recruitment costs
- training related to the company's procedures

- enhanced wage stability (because external hires can upset the relative wage balance)

Firms report that another advantage of apprenticeships is the “option value” of having extra well-trained workers. Given uncertainty about production levels and irreversible investments in certain workers, firms that invest in apprenticeship training create “real options.” When workers complete their training, firms have the option—but not the obligation—to hire some or all of the trained workers. Having additional well-trained workers with various skills allows firms to handle unexpected increases in demand or losses of other experienced workers. Although difficult to quantify, the value of these options increases a firm’s return on apprenticeship investments.

A survey of German employers offers insight into post-program benefits. Savings in recruitment and training costs averaged nearly €6,000 for each skilled worker trained in an apprenticeship and taken on permanently. Other benefits include reducing errors in placing employees, avoiding excessive costs when the demand for skilled workers cannot be quickly filled, and gaining performance advantages from internally trained workers who understand company processes better than skilled workers recruited from the job market. Taking all benefits into account appears to make apprenticeship investments a net gain for employers (Muehleemann and Wolter 2014).

Another benefit to firms that studies rarely capture is the positive impact apprenticeships have on innovation. Innovation is critical to success in a competitive environment. Well-trained workers are more likely to understand the complexities of a firm’s production processes and can identify and implement technological improvements, especially incremental innovations to improve products and processes. A study of German establishments documented this connection and found a relationship between the extent of in-company training and subsequent innovation (Bauernschuster, Falck, and Heblich 2009).

Reports by apprenticeship-sponsoring firms are revealing, even if they do not provide rigorous evidence of economic returns. In the US, evidence from surveys of more than 900 employers indicates that most believe their programs are valuable and involve net gains (Lerman, Eyster, and Chambers 2009). Nearly all sponsors reported that the apprenticeship program helps them meet their skill demands. Other benefits of apprenticeships include reliably documenting appropriate skills, increasing productivity and increasing morale, and reducing safety problems. Only 5 to 8 percent of surveyed firms did not find these benefits important. Nearly 87 percent of sponsors reported they would strongly recommend registered apprenticeships, and another 11 percent would recommend apprenticeships with some reservations. Only 2 percent said they would not recommend apprenticeships. Surprisingly, only one in four employers regarded “poaching”—in which nontraining firms hire apprentice graduates away from the firms that trained them—as a serious problem. Even among the firms most concerned about poaching, 85 percent still highly recommend apprenticeships.

Especially striking are the positive attitudes of employers that have recently adopted apprenticeship training programs. England and Wales are interesting in this regard because of the large increase in the number of firms that now offer apprenticeships (well over 100,000). A study of more

than 4,000 employers found that more than 80 percent were fairly or very satisfied with their apprenticeship program, while only 6 percent were dissatisfied (Tu et al. 2013). Nearly three in four employers mentioned increased productivity as a primary benefit, with most highlighting other outcomes likely to improve profitability, product, or service improvements; better staff retention; and the introduction of new ideas and innovations. More than 40 percent of employers reported that apprenticeships helped them win new business. About 80 percent of employers reported they expect to continue offering apprenticeships, and another 11 percent are considering doing so but are not certain.

Accounting Practices and Gains from Apprenticeships

Managers often assert employees' skills and commitment are their companies' most valuable assets. At the same time, they can manage only what they can measure (Lerman 2008). Because human capital investments are not treated the same way as physical investments on company balance sheets, managers may underestimate the gains from investing in apprenticeships. All the spending on skill development is a cost in the current year, though the company could gain benefits from these expenses over several years.

If investments in training were treated more closely in line with economic reality for measuring profits and assets (but not for tax purposes), the contributions of these investments would be measured more precisely and the benefits would become more apparent. Training investments should count as assets only to the extent that they yield a flow of future benefits to the company. That companies are willing to finance an extensive amount of training is an indication of their ability to capture some of the gains. Recently, the International Standards Organization issued ISO 30414 to provide guidelines for internal and external human capital reporting. It is the first international standard for reporting key metrics that are recognizable on an international scale and can increase transparency for all stakeholders and the public.²

Summary and Conclusions

Detailed data on large samples of firms training apprentices are available only in two countries. But evidence from several countries indicates that many firms can recoup most or all the gross costs of apprenticeship during the training period. Providing occupational training valuable outside the firm appears inconsistent with human capital theory's expectation that firms will pay only for specific training valuable to that firm. But because firms recoup most of the investment within the training period, the net costs of this general training are often low, if not zero. Firms that make positive net investments capture their returns in the early postapprenticeship period.

The quantitative estimates and qualitative reports come from employers that train or have trained apprentices. Whether these returns on apprenticeship investments would apply to firms not

undertaking apprenticeship is an open question. A demonstration that randomly encourages some but not other firms to use apprenticeship would help answer that question. Other evidence can be garnered from countries where substantial numbers of firms have recently adopted apprenticeships.

Countries with robust apprenticeship systems are showing how education and training can keep youth unemployment low and enhance the quality of jobs that do not require bachelor's degrees. International organizations are increasingly calling on other countries to expand apprenticeship programs. But will enough employers find it in their interest to offer them? A common argument is that by not offering apprenticeships, firms are signaling they do not view them as economically beneficial.

Alternatively, employers may simply lack institutional support or knowledge about how apprenticeship programs can increase profitability. After all, in countries with major initiatives to help firms understand and start programs (e.g., Australia and England), apprenticeship programs have expanded rapidly. Because apprenticeship training is highly effective for workers and yields external benefits the firm cannot capture, it makes sense to use public resources to stimulate apprenticeships. In many countries, reallocating funding from school-based vocational programs to apprenticeship programs that emphasize work-based learning can lower the costs per worker and increase training quality and relevance.

Although an international consensus favors expanding apprenticeships, the major policy question is this: How can countries develop and sustain large-scale apprenticeship training? Attracting workers to take advantage of apprenticeship opportunities is rarely a problem. So the question becomes this: How can policies stimulate employers to increase the number of apprenticeships?

In countries with limited programs, government and industry leaders must develop a brand, information campaigns about the benefits of apprenticeship, and narratives showing the gains apprenticeships can bring for workers and employers. Success requires an effective "retail" sales and technical support effort. Workforce agencies and intermediary organizations must learn how to convince firms that apprenticeships are good for business, teach businesses how to build an apprenticeship program, and organize program components to gain external public financial support. Once employers adopt apprenticeship, they will likely continue to do so, providing postsecondary training and education at a modest cost.

England's recent success in expanding apprenticeships demonstrates the feasibility of this approach. Apprenticeship starts jumped to more than 500,000 by 2012–13, a fivefold increase from 1999 levels and more than double 2007 levels. In the US, South Carolina's Apprenticeship Carolina initiative has also succeeded, being marketed at the state and firm levels, helped along by a small tax credit and a team of consultants working with employers to simplify the task of organizing apprenticeships. Even as the Great Recession led to job losses between 2007 and 2012, the number of South Carolina companies using apprenticeship increased from 90 to more than 660 and as of 2019, numbered more than 1,000.

Notes

- ¹ See “Employment Rate by Age Group,” Organisation for Economic Co-operation and Development, accessed August 25, 2019, <https://data.oecd.org/emp/employment-rate-by-age-group.htm#indicator-chart>.
- ² See “Human Resource Management—Guidelines for Internal and External Human Capital Reporting,” International Standards Organization, accessed August 25, 2019, <https://www.iso.org/standard/69338.html>.

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Light, Camera, Apprenticeship! How Apprenticeships Are Transforming the Creative Industries

Simon Whatmore

The National Theatre of Great Britain (the NT) is the pinnacle of theatrical presentation. Its three London stages on the South Bank regularly feature the biggest names of stage and screen.

On this stage, theater productions are expected to be perfect. For the audience, the delight is in the detail. To peek backstage, one can see the crucial role apprenticeships play in sustaining the NT's standards. Peering behind the curtain, one can witness an apprentice learning the skills required to be an experienced theater professional, as part of the National Theatre's Apprenticeship program. For any given show, 30 people will usually work backstage, but there can be as many as 90 who have worked to get the production on the stage for opening night.



Photo courtesy of the National Theatre of Great Britain.

The National Theatre's Apprenticeship program is emblematic of the versatility and value of the apprenticeship model of skill formation. The program covers several disciplines, from administrative roles (e.g., finance, information technology, and marketing) to more specialized technical theatrical disciplines (e.g., scenic art and construction, including metalwork and carpentry, lighting, sound and stage automation, and wigs, hair, and makeup).

"Apprenticeship wasn't always part of our DNA," says Kath Geraghty, workforce development manager in charge of apprenticeships at the NT. Since Geraghty was hired in 2011 to launch the NT's apprenticeship program, initial reluctance has given way to deeper organizational buy-in and support.

"In the beginning, there was a feeling that apprenticeships would not work at the National," said Geraghty. When the program launched, staff seemed wary of inexperienced apprentices joining their teams. "As a large and long-established arts organization, our staff tend to come to the Theatre relatively late in their career, with loads of knowledge and experience. As a result, there were fewer entry-level roles."

Since then, as the NT's apprentice intakes have developed and thrived, and the merits and benefits of the apprenticeship model are more appreciated, the organization has undergone a cultural shift, with staff embracing the program and valuing the opportunity of passing on their skills and knowledge to up-and-coming production professionals.

So what are the apprenticeship program's key successes?

First, the program has ensured the NT can access a reliable channel of top talent at a time when creative industries have become one of the major growth sectors in the UK's economy. There's a dearth of skilled theater technicians in many regions of the UK, and needs vary per location. Right now, for instance, the NT's technical and production director is filling its pipeline with technicians and scenic metalwork specialists.

A second significant success associated with the program is the accomplishments of the apprentices themselves. The NT reports strong retention and engagement from its apprentices, many of whom keep working directly with the NT or remain affiliated with it on a production-by-production basis. Graduates from the apprenticeship program are a hot item in the theater industry and beyond (in fact, one of the first apprentices now runs their own business and employs other apprentices outside the theater sector).

Third, the program has broadened the culture of the NT. The NT's primary goal is to make great theater for everyone. Diversity is embedded in this mission, including management's attention to gender and ethnicity on the stage, in the audience, and in its workforce. The emphasis on diversity has also become an integral part of the NT's apprenticeship program.

According to Geraghty, "The greatest benefit to the culture of the National Theatre is that apprentices give names to otherwise theoretical concepts which, in turn, makes all of us willing to

participate in conversations that might be otherwise too difficult.” The process changed an abstract concept into reality and educated the staff as well.

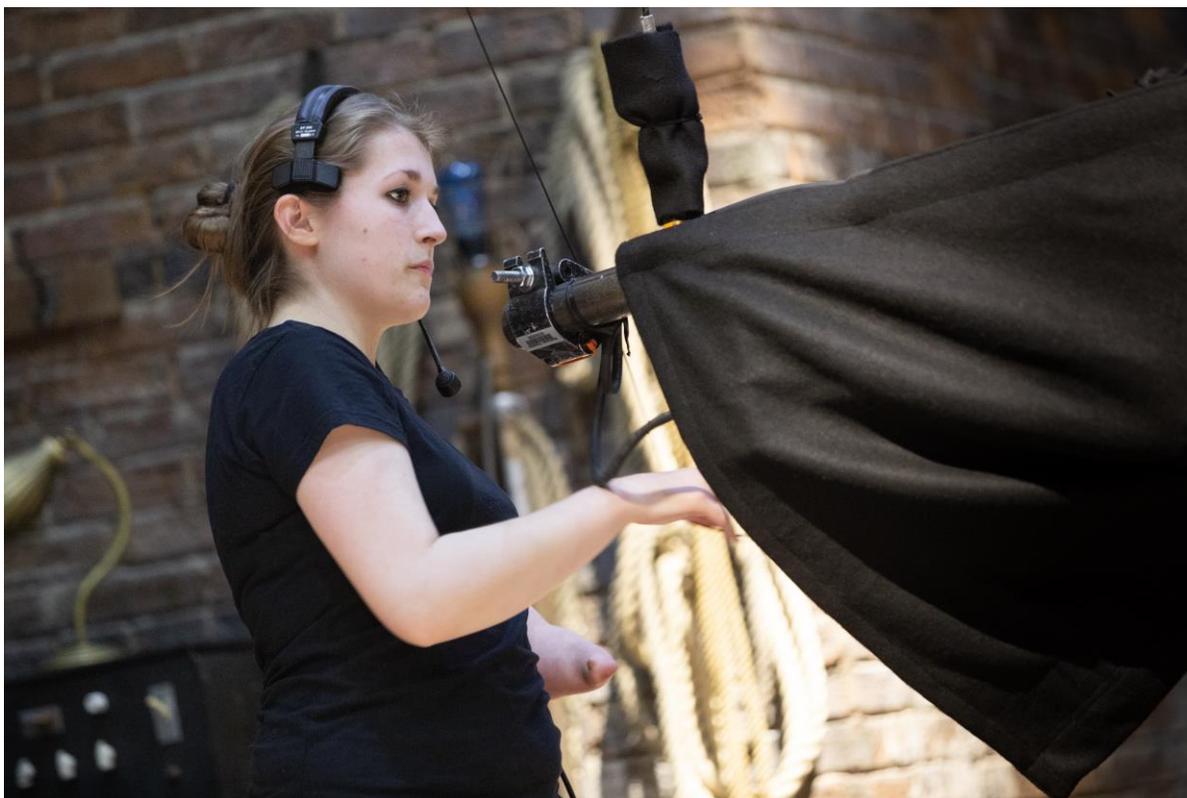


Photo courtesy of the National Theatre of Great Britain.

An additional benefit of increased workplace diversity is providing staff regular opportunities to deepen their understanding of their colleagues’ communities and significant religious or cultural events. On such occasions, in addition to celebrating with tea, cakes, and other speciality feast foods, apprentices are given the opportunity to explain the cultural significance of the particular festival to their workmates, providing an opening for a dialogue of awareness and understanding.

Similarly, whenever the NT recruits apprentices, the process enables the discussion of issues in hiring, such as unconscious bias, discrimination, privilege, and equity versus inequality in a safe, nonjudgmental way. Many departments have been through the recruitment process multiple times and think more deeply about how they might welcome diverse apprentices and staff.

When asked about what advice she would give other employers considering apprenticeship, Geraghty offered this: “It is important to be realistic and not to underestimate the time and commitment needed to produce a highly skilled apprentice. Consider what you genuinely can do and then decide what kind of candidate best fits your capabilities. At the National, we have a lot of resources and are able to recruit apprentices who may require more support than others due to inexperience or life issues.

If you have fewer resources, you may want to look for candidates who require support on the lower end—it's a sliding scale.”

With regard to growing staff support, Geraghty suggests not wasting time forcing the involvement of reluctant colleagues. Instead, find allies. Once success is achieved, the reluctant ones will test the waters. Further, she suggests, “If a manager is keen but some of the team haven't completely bought in, try to involve as many as possible in recruitment. This makes the program more about people and less conceptual.”

Geraghty also says it's important to maintain a commitment to high-quality entry-level opportunities and to consider the personal development aspects of these programs alongside professional development components.

As for apprenticeship trends over the next 5 to 10 years, from a UK perspective, Geraghty believes this workforce model is becoming increasingly attractive to those normally headed straight from secondary school to university. But this increased attractiveness will make it challenging for employers to keep apprenticeship spots open to a broad range of candidates, including those with less opportunity or cultural capital.

Simon Whatmore is an experienced education policy and management consultant, based in Melbourne, Australia. Simon possesses strong conceptual and analytical skills, public policy knowledge, understanding of governmental process, and ability to develop original policy and program solutions through building rewarding collaborative relationships with a diverse array of stakeholders.

Economic Returns to Apprentices: Two Perspectives

Deborah Reed and Robert I. Lerman

In today's competitive economy, employers need a skilled workforce, and workers need education and training to succeed in high-quality, high-paying jobs. For more than 80 years, the registered apprenticeship system has provided flexible job training that combines technical instruction with structured, on-the-job learning experiences. Apprenticeship programs keep pace with innovation and technology to meet the changing needs of employers and workers. As of 2018, there were more than 585,000 apprentices in more than 23,400 registered apprenticeship programs nationwide.¹

To examine whether the registered apprenticeship system is a good investment for states and the federal government, the US Department of Labor funded a study of the system, focusing on whether its societal benefits outweigh the costs (Reed et al. 2012). The study found that for apprenticeship participants who completed their program, the estimated career earnings and benefits were an average of \$300,000 more than similar people who did not participate in apprenticeship. The estimated social benefits of an apprenticeship exceeded the costs by more than \$49,000.

About Apprenticeships

- Apprenticeship opportunities are available in more than 1,000 occupations
- Traditionally, apprenticeships have been in the skilled trades, such as electrical work, plumbing, and carpentry
- Apprentice programs now include such occupations as truck driver, child care worker, nursing aide, and correctional officer
- Apprenticeships range from one to six years (most are four years)

Earn and Learn: How Registered Apprenticeship Works

Deborah Reed

The registered apprenticeship earn-and-learn training model provides on-the-job training, related technical instruction, incremental wage increases as skills are attained, and nationally recognized certification in the chosen occupation. Many programs give people the opportunity to obtain secondary

and postsecondary degrees. Apprenticeship programs are delivered by sponsors—employers, employer associations, and labor management organizations—that fund training, wages paid to apprentices, and other program costs.

The registered apprenticeship system is administered by the US Department of Labor’s Office of Apprenticeship in conjunction with state apprenticeship agencies. The Office of Apprenticeship and state agencies register programs and apprentices, issue certificates of completion, monitor programs for compliance and quality assurance, provide technical assistance, conduct outreach to potential sponsors, and build partnerships with sponsors, employers, education providers, and the workforce development system.

Measuring the Return on Investment

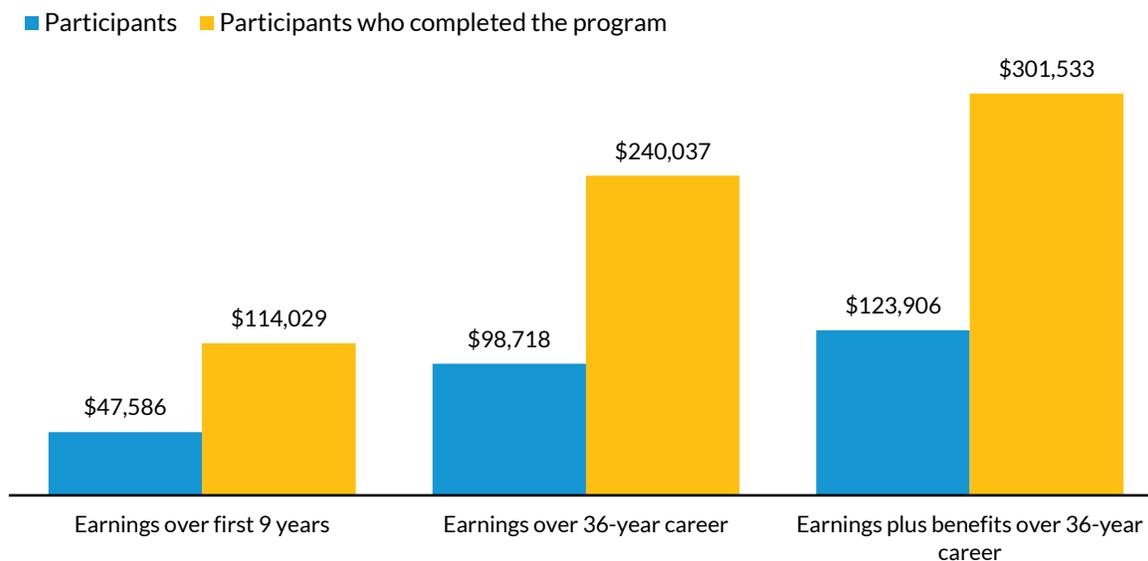
The study compared earnings of apprenticeship participants from 2000 to 2010 with earnings of people who did not participate in apprenticeship programs but who had similar earnings, employment histories, and demographic characteristics (e.g., age, gender, race or ethnicity, and educational attainment). The study examined apprenticeship programs in 10 states with varying program features and labor market characteristics: Florida, Georgia, Iowa, Kentucky, Maryland, Missouri, New Jersey, Ohio, Pennsylvania, and Texas. The study was modeled, in part, on a study for Washington State that found substantial net benefits of apprenticeship (Hollenbeck and Huang 2006). Additional examinations of apprenticeship programs in the United States and internationally have found substantial returns on investment.²

Apprentices Earn Substantially More

After enrolling, registered apprenticeship participants earned an average of \$47,586 more over the first nine years than those who did not participate. Participants who completed the program, roughly half of all who enrolled, earned an average of \$114,029 more in those nine years compared with nonparticipants (figure 1). All dollar figures are inflation-adjusted to the year 2000, the first year of the study period.

FIGURE 1

Average Gains in Earnings by Apprentices



The study also estimated the difference in earnings between apprenticeship participants and nonparticipants over an entire career. Findings indicate that a person who participated in the apprenticeship program would earn an average of \$98,718 more than someone who did not participate (estimates are based on the earnings patterns observed for the first nine years following program enrollment). People who completed an apprenticeship would earn an average of \$240,037 more than nonparticipants over their careers. If such benefits as health insurance are included in the calculation, people who completed the apprenticeship program would earn an estimated \$301,533 more than people who did not participate. The study did not conclusively identify the impact of apprenticeships on earnings. Some, or even all, of the apprentices' higher earnings could be because of differences in their skills or commitment.

Improving Job Quality

Robert I. Lerman

Apprenticeships can influence earnings by upgrading the distribution of jobs and job tasks. Doeringer and Piore (1970) looked at segmented labor markets, where some employers choose to train, hire from within, and keep workers for long periods, while others operate mostly on the spot market, hiring and firing frequently and providing little training. Subsequently, many authors have highlighted that businesses have the choice to become “high-road” or “low-road” employers. Osterman and Shulman (2011) find examples of firms producing the same goods or services using technologies that generate more or fewer skilled jobs paying good wages.

The mix of jobs in an economy is not fixed, independent of the skill levels of workers and the systems for generating these skills. Suppose, instead, that the job distribution depended at least partly on the products of the education and training system. In this case, when the emerging skills from the system are weak, firms can respond by developing positions with limited skills, productivity, and wages. Alternatively, a system that turns out highly skilled workers can encourage employers to offer jobs requiring skills and productivity.

The impacts of apprenticeship on the job distribution can take place within or between industries. It is probably no coincidence that Germany and Switzerland, two countries with high levels of apprenticeship training, continue to outpace the US and other academic-based countries in maintaining a high share of workers in manufacturing jobs. The share of jobs in manufacturing in Germany is double the share of manufacturing jobs in the US. Switzerland employs nearly one in four workers in manufacturing or construction, while only about one in seven US workers is employed in these goods-producing industries.

Within industries, adopting apprenticeships can encourage employers to upgrade jobs, especially low-skill or semiskilled positions. A midlevel hotel manager trained through the German apprenticeship system can analyze sales trends, prepare invoices, carry out payment transactions, evaluate key business data, keep business statistics, calculate costs and revenue, and handle procurement processes. In countries without robust apprenticeship systems, employers would generally hire only four-year college graduates for such jobs. In residential construction, a contractor can define jobs with a narrow range of tasks (e.g., putting up drywall) or with the expectation of mastery of several competencies in carpentry. The presence of a convenient, cost-effective apprenticeship system may encourage employers to choose the high-skill, high-productivity, and high-wage approach.

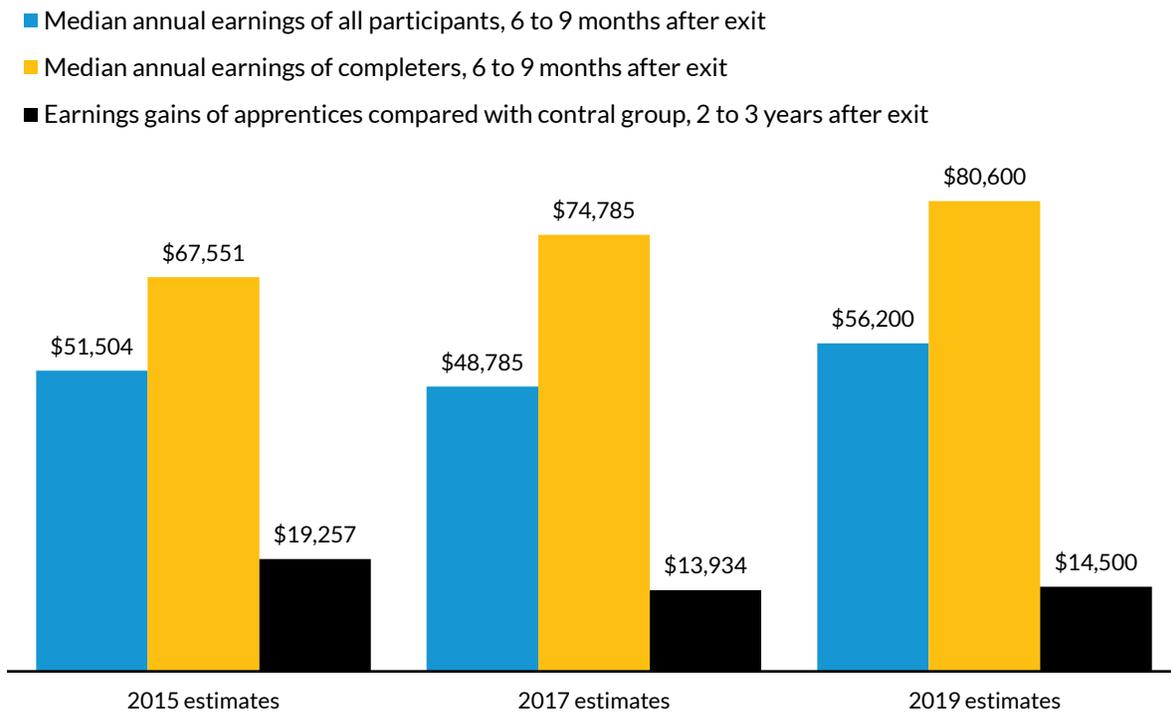
Selected Evidence on Returns to Apprentices from Washington State and outside the US

Studies on US programs indicate that apprentices do not sacrifice earnings during their education and training and that their long-term earnings benefits exceed the gains to completing a degree at a community college (Hollenbeck and Huang 2006). Annual reports from the Washington State Workforce Training and Education Coordinating Board indicate that the gains to earnings from apprenticeship programs far surpass the gains to all other alternatives.

The analyses match individual participants and separately matched control groups for each training program with their quarterly wage records. The median annualized earnings recorded six to nine months after exits from the respective programs show earnings for apprentices are high in absolute terms and are more than double those of participants in professional or technical community college programs.

These comparisons of actual earnings may overstate the gains to apprentices relative to community college participants because apprenticeship programs are more selective than community college programs. Indications of this selectivity are evident from the patterns shown in table 1. For the first six to nine months after program exit, the gaps between the median annualized earnings of apprentices and of community college participants are more than \$30,000. But the net annual earnings gains of apprentices over matched control groups range from \$14,500 to \$19,257 two to three years after program exit. Still, these net earnings gains are more than double the net earnings gains observed for students pursuing professional or technical degrees at community colleges. Some of the differential gains for apprentices may have to do with the high rates of apprenticeship participation in construction and manufacturing.

FIGURE 2
Economic Returns to Apprenticeships in Washington State



Source: Washington State Workforce Training and Education Coordinating Board.

TABLE 1

Economic Returns to Apprenticeship and Professional and Technical Community College Programs

	Median Annualized Earnings of Completers, 6 to 9 Months after Exit		Earnings Gains Relative to Control Groups, 2 to 3 Years after Exit	
	Participants in professional or technical community college		Participants in professional or technical community college	
	Apprentices	programs	Apprentices	programs
2015 estimates	\$67,551	\$29,817	\$19,257	\$9,467
2017 estimates	\$74,785	\$31,228	\$13,934	\$6,148
2019 estimates	\$80,600	\$34,700	\$14,500	\$5,800

Source: "Workforce Training Results," Washington State Workforce Training and Education Coordinating Board, last updated October 14, 2019, <http://wtb.wa.gov/WorkforceTrainingResults.asp>.

The 10-state study and the Washington State tabulation results are consistent with many studies of apprenticeship training in Europe showing high rates of return for workers. Fersterer, Pischke, and Winter-Ebmer (2008) exploited variation in apprentices' abilities to complete their programs (caused by firms going out of business) to estimate the effects of additional years of apprenticeship. The researchers found that apprenticeship training raised wages about 4 percent per year of training. For workers completing a three-to-four-year apprenticeship, postapprenticeship wages were 12 to 16 percent more than the wages of those who did not complete an apprenticeship because the firm went out of business. Because the workers' participation costs were often minimal, the Austrian study found high overall benefits and modest costs.

Noneconomic outcomes are more difficult to quantify, but evidence from Europe suggests that vocational education and training in general is linked to higher confidence and self-esteem, improved health, higher civic participation, and higher job satisfaction (Cedefop 2011). These relationships hold even after controlling for income. An Australian study found that high-quality apprenticeships improve mental health (Buchanan et al. 2016).

Skill Retention Associated with Apprenticeships

Some worry about whether the skills learned in apprenticeships bring the portability required to adapt to technical changes. Although impacts are likely to vary by occupation, some studies indicate a high degree of skill portability associated with apprenticeship training.

Geel, Mure, and Backes-Gellner (2011) note that all skills are general in some sense, and occupation-specific skills are composed of various mixes of skills. The authors compile the key skills and their importance for nearly 80 occupations. They then use cluster analysis to estimate how skills are grouped within narrow occupations.

The authors find that while only 42 percent of apprentices stay in their initial occupation, nearly two-thirds remain with either the occupation they learned as an apprentice or another occupation in the cluster using a similar mix of skills. Second, those trained in occupations with more specific skill sets are most likely to remain in their initial occupation or move to occupations within the same cluster. Third, apprentices increase their wages when moving to another occupation within the same cluster but lose skills when moving to another cluster.

Other strong evidence of the high returns and transferability of German apprenticeship training comes from Clark and Fahr (2001). They examine the returns to apprenticeship for people who remain in the original apprentice occupation as well as losses that do or would occur from transferring to another occupation. The rates of return on each year of apprenticeship range from 8 to 12 percent for training in firms with 50 or more workers and from 5.5 to 6.5 percent for firms of 2 to 49 workers. Transferring to another occupation can offset these gains, but the reduction is zero for those who quit and only 1.7 percent for those who are displaced from their job and shift to another occupation. The wage penalty varies with the distance from the original occupation. There is no penalty from displacement into a related occupation.

Finally, Clark and Fahr (2001) present workers' views on how much they use the skills learned in apprenticeship training in their current jobs. Not surprisingly, 85 percent of workers remaining within their training occupation use many or nearly all of the skills they learned through apprenticeship. This group constitutes 55 percent of the sample. But even among the remaining 45 percent, about two in five workers reported using many or nearly all of the skills from their apprenticeship, and one in five used some of the skills. Only 18 percent of former apprentices stated they used few or no skills learned in their apprenticeships. The findings show that the skills taught in German apprenticeship training are often general. Even when bundled for a specific occupation, the skills are portable across a cluster of occupations.

Apprenticeships Offer High Return on Investment at Low Government Costs

The study findings indicate that the registered apprenticeship program provides a high return on investment for society. The main benefit is the value of the added productivity of workers who participated in the apprenticeship program. One study indicates the net benefit to society from one apprenticeship ranges from \$49,000 to \$124,000, depending on assumptions about unmeasured benefits and costs, duration of the benefits, and how much of an apprentice's productivity is assumed to be the result of program participation (Reed et al. 2012). Findings from the Washington State studies indicate lifetime gains for apprentices of more than \$300,000 (Hollenbeck and Huang 2006).

These studies point out that these earnings gains come at a modest cost to taxpayers and the public. The Washington State calculations suggest the ratio of earning gains to taxpayer costs to be 36:1. Although the ratio is lower based on the study by Reed and coauthors (2012), both document the high returns to taxpayers from promoting apprenticeship as the primary workforce alternative.

Notes

- ¹ “Registered Apprenticeship National Results, Fiscal Year (FY) 2018 (10/01/2017 to 9/30/2018),” US Department of Labor, Employment and Training Administration, last updated September 3, 2019, https://www.doleta.gov/oa/data_statistics.cfm.
- ² “Expanding Apprenticeship: Return on Investment (ROI),” WorkforceGPS, accessed September 5, 2019, <https://apprenticeshipusa.workforcegps.org/resources/2017/08/29/12/43/Expanding-Apprenticeship-Return-on-Investment-ROI>.

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English Apprenticeships: Striking the Right Balance between Quality and Quantity

Olly Newton

England has a long history of apprenticeships dating back to the medieval era but has undergone a period of rapid policy change. The government has introduced ambitious numerical targets (3 million apprenticeship starts by 2020) and measures designed to affect apprenticeship quality. This article looks at the lessons learned from these changes and potential trade-offs between quality and quantity.

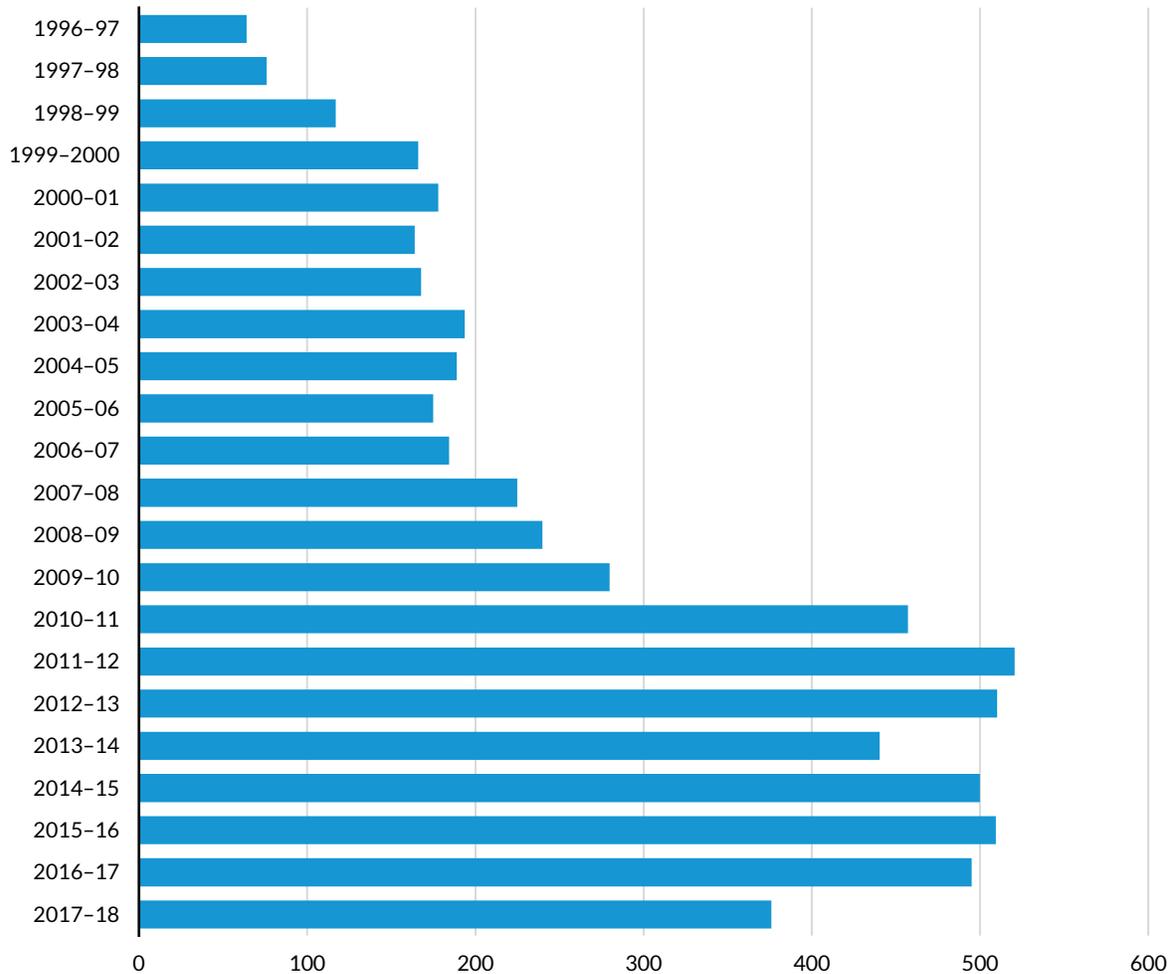
Apprenticeships are **one of the major success stories of English vocational education**. The number of annual starts has risen from less than 100,000 in the 1990s to more than 350,000 today, and satisfaction rates from employers and apprentices are consistently close to 90 percent. But the story of the development of English apprenticeships provides important lessons about the interplay between and prioritization of quality and quantity. It is always tempting for politicians and the media to gravitate toward increasing numbers, but that can be counterproductive if it happens without a clear plan for continuous quality improvement.

Apprenticeship Starts Have Increased Dramatically Since the 1990s but Have Fallen in Recent Years

The number of people starting apprenticeships has increased since the lows of the 1990s, from less than 100,000 a year to close to 500,000 in the mid-2010s (figure 1). But the peak of around 521,000 starts in the 2011–12 academic year has proved elusive since then, **with the number of starts in 2017–18 dropping to around 376,000**. This has been strongly affected by recent apprenticeship reforms, as the system takes time to adjust to significant policy changes.

FIGURE 1

Thousands of Apprenticeship Starts



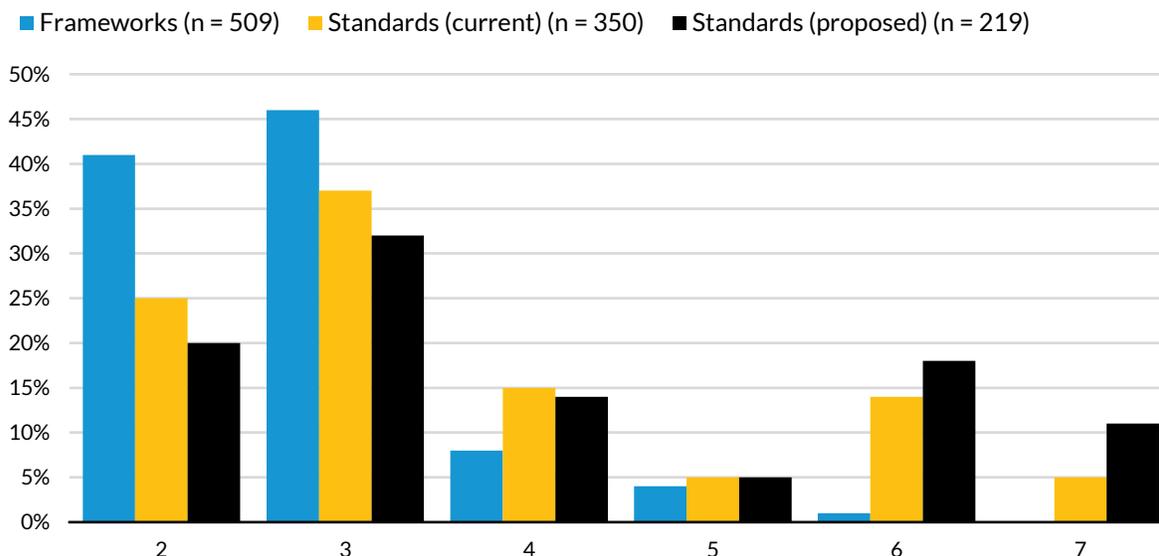
Source: Jeanne Delebarre, “Apprenticeship Statistics: England (1996–2015)” (London: House of Commons Library, 2015).

Recent Reforms Have Altered the Balance by Level of Study

The former apprenticeship framework qualifications, which are being phased out, were heavily focused on level 2 and level 3—the equivalent of high General Certificate of Secondary Education pass grades and A levels (figure 2). Some **88 percent of those qualifications led to a level 2 or level 3 qualification, a much higher proportion than in the new apprenticeship standards.** The new standards also bring in the first level 7 qualifications (equivalent to master’s degrees), with 40 either already approved for delivery or under development as of October 2018.

FIGURE 2

Distribution of Apprenticeship Qualifications, by Level



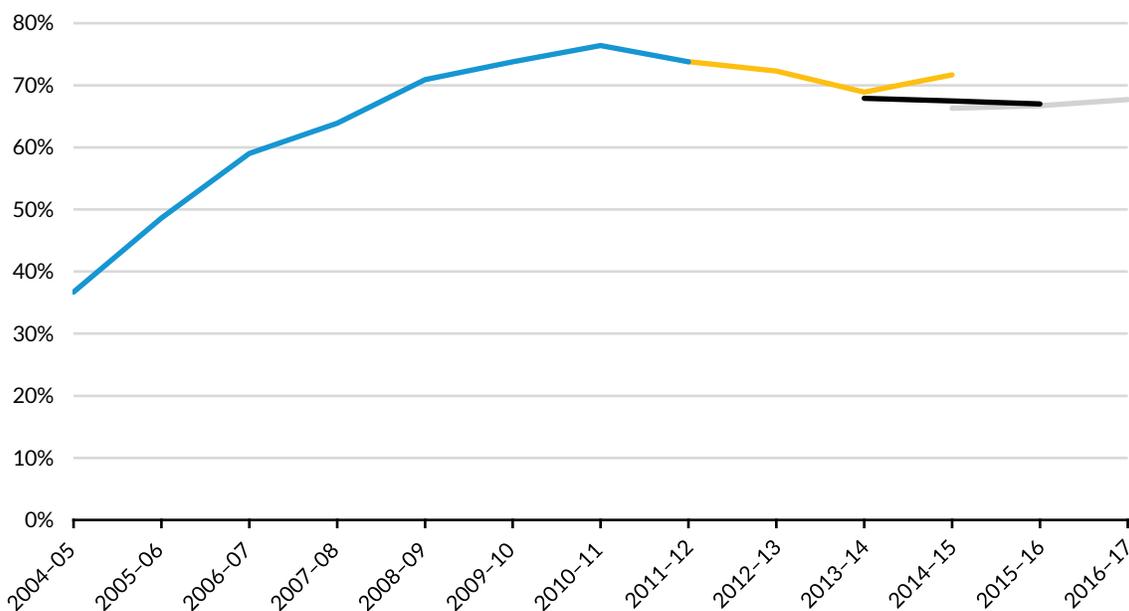
Sources: Frameworks data come from the May 24, 2018, Department for Education funding band data (several have been discontinued since then). Standards data come from an October 7, 2018, download from the Institute for Apprenticeships and Technical Education, defining current standards as any that had been approved for delivery before October 1, 2018.

The growing availability of high-level apprenticeships has increased the number of starts working toward high-level qualifications. In 2016–17, 7 percent of starts were on high-level apprenticeships (levels 4 through 7, where level 6 is equivalent to a typical undergraduate degree), compared with less than 1 percent from 2009–10 to 2011–12.

Apprenticeship Achievements Have Plateaued but Vary Significantly between Sectors

The way achievements are calculated has changed, but the broad trend is clear. Achievement rates for all ages and levels rose significantly from a third in 2004–05 to just over three-quarters in 2011–12. Since then, completion rates have declined slightly to around two-thirds in 2016–17 (figure 3).

FIGURE 3
Overall Apprenticeship Achievement Rates, by Year



Sources: UK Department for Education, “National Achievement Rate Tables: March 2018” (London: UK Department for Education, 2018), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691975/SFR19_2018_MainText.pdf; UK Department for Education, “Further Education and Skills in England: March 2017” (London: UK Department for Education, 2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/618924/SFR13-2017-June-revision.pdf; UK Skills Funding Agency (SFA), “Education and Training National Success Rates Tables—Overall Success Rate—Headline Report” (London: SFA, 2015), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419952/E_T_NSRT_Overall_Headline_1314_v1.zip; and SFA and UK Department for Business Innovation and Skills, “Apprenticeship Success Rates: July 2014” (London: SFA and UK Department for Business Innovation and Skills, 2014), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/327291/apprenticeships-successrates-july2014.xls.

Achievement rates vary significantly by sector subject area from 65 percent (arts, media, and publishing) to 77 percent (education and training) for 2016–17. But larger differences can be observed within these areas (figure 4 and table 1). The largest range can be seen in business, administration, and law, where a level 2 marketing and sales apprenticeship saw a 48 percent achievement rate, compared with a 78 percent rate for level 2 accounting and finance.

FIGURE 4

Overall Achievement Rates by and within Sector Subject Area, 2016-17

Percent

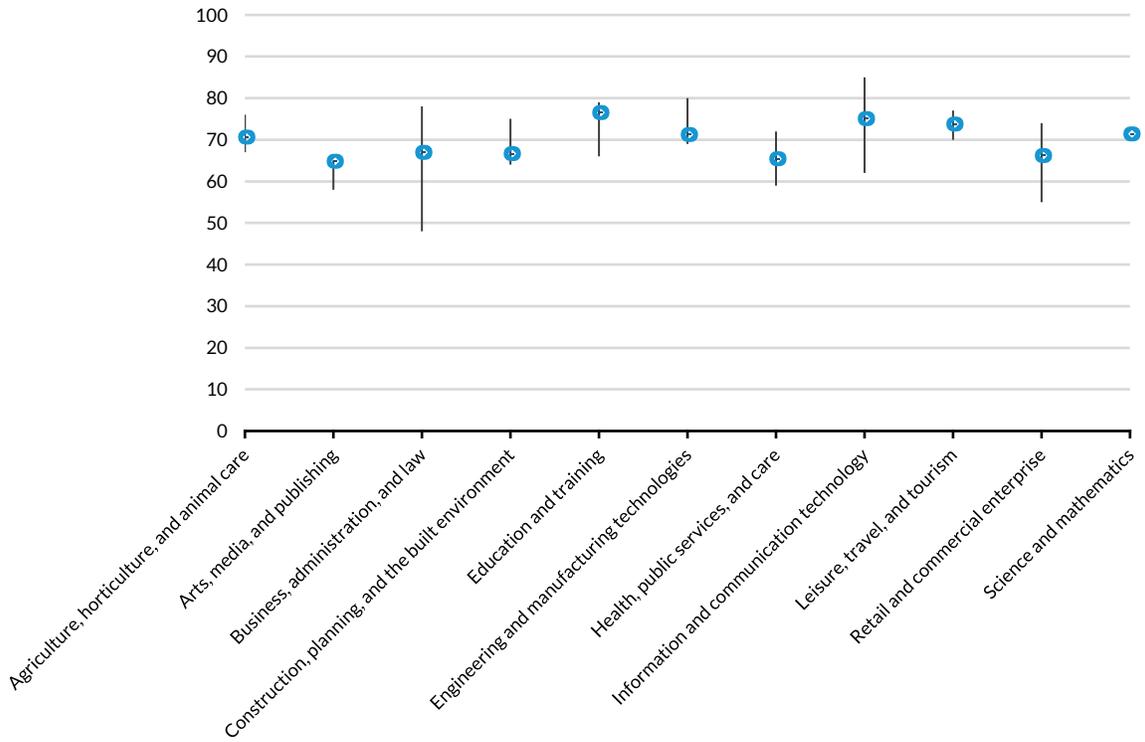


TABLE 1

Overall Achievement Rates by and within Sector Subject Area, 2016–17

Sector subject area	Cohort size	Achievement Rates, 2016–17		
		Average, lowest, highest	Subset Apprenticeships ^a	
			Lowest	Highest
Agriculture, horticulture, and animal care	6,630	71%, 67%, 76%	Horticulture and forestry–L2	Agriculture–L3
Arts, media, and publishing	1,110	65%, 58%, 65%	Crafts, creative arts, and design–L3	Media and communication–L3
Business, administration, and law	113,700	67%, 48%, 78%	Marketing and sales–L2	Accounting and finance–L2
Construction, planning, and the built environment	17,360	67%, 64%, 75%	Building and construction–L2	Building and construction–L3
Education and training	6,880	77%, 66%, 79%	Teaching and lecturing–L3	Direct learning support–L2
Engineering and manufacturing technologies	64,340	71%, 69%, 80%	Manufacturing technologies–L2	Transportation operations and maintenance–L3
Health, public services, and care	103,070	65%, 59%, 72%	Public services–L3	Child development and well-being–L2
Information and communication technology	12,650	75%, 62%, 85%	ICT practitioners–L4+	ICT practitioners–L2
Leisure, travel, and tourism	12,390	74%, 70%, 77%	Sport, leisure, and recreation–L2	Sport, leisure, and recreation–L3
Retail and commercial enterprise	70,600	66%, 55%, 74%	Retailing and wholesaling–L2	Warehousing and distribution–L2

^aOnly one example given where multiple are tied.

English Apprenticeships Remain Shorter and Narrower Than Those in Other Countries

A large-scale international review in 2017 found that **apprenticeships in England average around 18 months, whereas apprenticeships in the other countries surveyed ranged from 2 to 4 years.** These countries include Austria, Germany, the Netherlands, and Switzerland, which are often held up as examples of high-quality technical education provision (table 2).

TABLE 2

The Duration of Apprenticeship Programs and How Apprentices Spend Their Time

	Duration of the program including off-the-job period and work placement with the company	Time allocation in apprenticeship programs	Workplace time spent in production and nonproductive tasks
Austria	3 to 4 years	66%—workplace 20%—off-the-job education and training 14%—leave and sick days	83% of the time with the company is spent on productive work
Denmark	3.5 to 4 years (typically)		
England	Minimum 12 months, 15 months on average	At least 20% in off-the-job education and training (sometimes in the workplace but outside productive work)	
Germany	3 to 3.5 years	56%—workplace 29%—off-the job education and training 14%—leave and sick days	77% of the time with the company is spent on productive work
Netherlands	2 to 4 years		
Norway	Mostly 4 years (shorter programs are available for disadvantaged students)	Apprentices spend as much time in school as in a workplace with the company	1 year of training 1 year of productive work
Sweden	3 years	Apprentices spend as much time in school as in a workplace with the company	
Switzerland	3 to 4 years (2-year programs are available for disadvantaged students)	59%—workplace 27%—off-the-job education and training 14%—leave and sick days	83% of the time with the company is spent on productive work

Source: Małgorzata Kuczera, *Striking the Right Balance: Costs and Benefits of Apprenticeship* (Paris: Organisation for Economic Co-operation and Development, 2017).

The Organisation for Economic Co-operation and Development (OECD) has also highlighted that the long-duration apprenticeships in dual systems involve a substantial amount of general, off-the-job education (Kuczera and Field 2018). This can represent **around 400 hours versus the 50 hours of study** that occur in typical English apprenticeships. One common principle in longer apprenticeships is the idea that the first year should include a **broad introduction to the occupation's content before apprentices specialize** in future years.

Lessons from Recent Research

Benchmarking the Quality of English Apprenticeships

Simon Field, Director, Skills Policy Ltd.

English apprenticeships are usually shorter and are at a lower level than those in many countries. Apprentices in England are often adults, as is true in Australia and some other English-speaking countries but unlike, say, Switzerland, where new apprentices are nearly all teenagers. But comparisons using averages don't tell the whole story. English apprenticeships are unusually diverse, ranging from low-level one-year programs to three- and four-year engineering apprenticeships. New degree apprenticeships add to this diversity.

Three lessons stand out:

- First, new rules requiring 20 percent of an apprenticeship program to be spent “off the job” are proving controversial. Yet internationally, this is a modest requirement: in Finland, 20 to 30 percent of the program is off the job, and in New Zealand, the comparable figure is one-third.
- Second, there is a widespread challenge to ensure that the qualifications linked to apprenticeships have sufficient breadth, that they are specific enough to appeal to particular employers but broad enough to provide a career foundation. German employers have said they would like 1,000 apprenticeship occupations, while trade unions want 100.
- Third, most leading apprenticeship systems allow people to proceed directly to an assessment that will offer them the certification they need. In Norway, about one-third of journeyman certificates are awarded this way, but this is a gap in the English system Field (2018).

Degree Apprenticeships: Higher Technical or Technical Higher Education?

Jim Hordern, Reader, Bath Spa University

Daniel Bishop, Lecturer, Leicester University

Degree apprenticeships (DAs) are a recent addition to the system, and we wanted to explore the higher and vocational characteristics of the programs, as they were introduced in the aerospace engineering and construction (construction management and quantity surveying) sectors (Bishop and Hordern 2017).

In both sectors, DAs offer both a partial solution to skill shortages and an opportunity to diversify the intake of apprentices and graduates. Employers stated that many degree apprentices would come from 18-year-old A level graduates. But in the construction sector, DAs could offer a vehicle for workforce development, as many employees may be able to take advantage of an initial level 4 higher apprenticeship with entry requirements of 5 General Certificate of Secondary Education tests at A*-C,

before progressing to the level 6 DA. Some recruitment could come through level 2 and level 3 trade apprenticeships in the future, but this was not thought to be a major source.

The project illustrated the distinctive type of higher vocational education emerging through DA partnerships between employers and higher education providers. Some higher education institutions expressed concern that apprentices would be offered a different educational experience from full-time or sandwich students, but employers noted the advantages their apprentices would have in learning together with apprentices from other organizations and “traditional” students in a higher education environment.

Using Analytical Tools to Improve Apprenticeship Breadth and Quality

Lorna Unwin, Professor Emerita (Vocational Education), University College London

Alison Fuller, Professor of Vocational Education and Work, University College London

Through our long-standing research on apprenticeships, we have identified characteristics that affect the quality of provision and the nature of apprentices’ experiences (Fuller and Unwin 2004, 2017). From this, we have worked with employers, training providers, and trade unions to develop the *expansive–restrictive continuum* as a framework to help them evaluate the strengths and weaknesses of their provision.

At the expansive end of the continuum, we find employers (of all sizes in all sectors, public and private) who understand that apprenticeships (whatever the level) can sustain and enhance the expertise of their workforce. At the restrictive end, the focus is on filling production gaps or, at best, helping employees gain accreditation for their skills. Assessment-led forms of delivery bring in the numbers but require little training. A key feature of expansive apprenticeships is that they develop new skills and knowledge and provide a solid platform for progression.

TABLE 3

The Expansive–Restrictive Framework in the Context of Apprenticeships

Expansive	Restrictive
Apprentice develops occupational expertise to a standard recognized across an industrial or service sector	Apprenticeship develops or has existing skills assessed within a limited job role
Employer and training provider share a commitment to apprenticeship as a platform for career progression and occupational or professional registration	Apprenticeship doesn't allow the capacity to progress beyond the present job role
Apprentice has dual status as learner and employee: explicit recognition of, and support for, individual as learner	Status as employee dominates: limited recognition of, and support for, apprentice as learner
Apprentice makes a gradual transition to productive worker and is stretched by employers and providers to develop expertise in their occupational field	Fast transition to productive worker with limited knowledge of the wider occupational field
Apprentice is a member of an occupational community with access to the community's rules, values, history, occupational knowledge, and practical expertise	Apprentice is treated as extra pair of hands with access to limited knowledge and skills to perform the job
Apprentice participates in different communities of practice inside and outside the workplace	Training is restricted to a narrowly defined job role and workstation
Apprentice's work tasks and training are closely mapped against recognized occupational standards and assessment requirements to ensure he or she becomes fully competent	Weak relationship between workplace tasks, occupational standards, and assessment requirements
Apprentice gains forms of certification with labor market currency, enabling progression to the next level (career or education)	Apprentice doesn't have the opportunity to gain valuable and portable certification
Off-the-job training includes time for reflection and stretches the apprentice to reach his or her full potential	Supporting the apprentice to fulfill his or her potential is not seen as a priority
Apprentice's existing skills and knowledge are recognized and valued and used as platform for new learning	Apprentices have limited opportunity to expand their existing skills
Apprentice's progress is closely monitored with regular constructive feedback from a range of employer and provider personnel, including managers, who take a holistic approach	Apprentice's progress is monitored for immediate job performance with limited developmental feedback

The framework is designed as a working document and an analytical tool. The aim is not to judge restrictive apprenticeships as being worthless but to trigger questions so employers and training providers can plan (and monitor) how they might make their apprenticeships more expansive.

Case Studies of Excellent Practice

Broad and Holistic Apprenticeships: The Eden Project

Since 2014, the Eden Project has worked closely with Cornwall College to reinvigorate apprenticeships. They offer apprenticeships in catering, horticulture, and events management, but they also offer specialized apprenticeships in human resources, finance, marketing, plumbing, and carpentry.

In 2018, Eden employed 9 apprentices on a two-year contract, so they have between 20 and 30 apprentices at any one time. There are opportunities for advancement, and some apprentices are available at levels 3 through 5. Eden works with Cornwall College, which has the expertise to deliver courses in horticulture. Eden also works with other employers as partners. One is the Lost Gardens of Heligan, where apprentices learn about fields and forests in a natural setting.

Eden offers its apprentices a broad and holistic experience. In the first year, apprentices spend time in Eden's seven sectors of horticulture, and in the second year, they choose one specialization area. Eden also emphasizes developing transferable skills through its Sustainable Enterprise Programme. There is a strong support infrastructure built into the program. Each apprentice works with a mentor who focuses on developing the apprentice's life skills.

In addition, apprentices are engaged in project work each year. For example, first-year apprentices work on a project called From Plan to Plate, a multidisciplinary team project that produces a consumable product. Apprentices must plan and consider such issues as using ethically and locally sourced ingredients and sustainability. The teams present their products to managing directors, local businesspeople, college representatives, and the community. As Tim Lal remembers, "Apprentices' sense of achievement was huge." Second-year apprentices take part in a community-related project, during which they reflect on their work and plan the next steps while keeping sustainability, recycling, and saving the planet at the forefront of their thinking.

Apprentices value their experience at Eden. One apprentice said, "[Being an apprentice at Eden] is once-in-a-lifetime opportunity, and having Eden on my CV makes me stand out."

Half the apprentices are offered jobs at Eden once they finish, and the others secure employment elsewhere or go on to further studies.

Using Mentoring to Increase Completion: Approaches from Jersey, Northern Ireland, and Australia

TRACKERS APPRENTICESHIP PROGRAMME IN JERSEY

In 2012, Jersey overhauled its apprenticeships program, focusing on young people's progression and introducing mentoring for all apprentices independent of both the employer and training provider. Each mentor supports an average caseload of 25 to 30 young people.

Stuart Penn, Skills Jersey's operations manager, explains the organization's role: "Apprentices are given a dedicated, qualified mentor to coach, support, and guide them through their apprenticeship. Mentors meet regularly with apprentices on a one-to-one basis to help develop their soft skills; help arrange employer, apprentice, and tutor meetings; and challenge and develop apprentices to reach their full potential. To help the apprentice get the best from their apprenticeship, mentors use coaching techniques such as personal reflection, performance review, goal setting, and action planning. They meet with [the] apprentice and employer on a quarterly basis to facilitate progress reviews and joint goal setting."

A year after the new program was introduced, when asked their favorite thing about the program, almost 70 percent of employers and apprentices said it was the mentoring element. One student said, "It is good to know that there is someone other than the teachers to ask for help not only for the course but in other areas of learning."

The impact on the retention rate has been dramatic, which has risen from 60 percent under the older program to 96 percent in the most recent figures.

BELFAST METROPOLITAN COLLEGE IN NORTHERN IRELAND

Belfast Met recognizes the power of mentoring both within the workplace and as part of an apprenticeship's training element.

The college provides training to each apprentice's workplace mentor, which includes a handbook and a face-to-face training session. This training helps mentors gain confidence in managing a new staff member and be a first point of contact for any challenges they face. They emphasize this training as an additional benefit to the businesses involved.

This is supplemented by a team of 10 skills support coaches within the college who develop personal training plans with apprentices to ensure their program is personalized to meet their needs. This plan is reviewed and updated every six weeks to support progress in core training and broader employability skills.

HOLMESGLEN INSTITUTE IN AUSTRALIA

Australia has a well-established apprenticeship system, including standardized training and licences to practice across the nine federal states and territories. But completion rates (at 49 percent nationally) are low by international standards.

At the Holmesglen Institute, the largest further education college in Victoria, completion rates were 53 percent when the team decided to address this. They recognized there are many different roles in the system, some of which confusingly overlap, but none of these focused on the welfare of the apprentices themselves.

The college introduced a pilot of five apprenticeship support officers with 100-person caseloads. They provided pastoral support, mentoring, and advice about financial support using a triage process to prioritize their time and effort among the apprentices they worked with.

Warren Guest, a lecturer at the Holmesglen Institute, said, “Over six months, this additional support helped to drive up completion rates from just over 50 percent to 85 percent. This allowed the pilot to more than pay for itself because in Australia, there are financial incentives on training providers to support completion. As a result, we have decided to roll out the program more widely in the college.”

Degree Apprenticeships: University of Warwick

Degree apprenticeships were introduced in 2015 in England and Wales and provide an opportunity to work for an employer as a paid employee for three to six years and gain a bachelor’s or master’s degree (levels 6 and 7) at the same time.

The University of Warwick initially offered degree apprenticeships in the Warwick Manufacturing Group (WMG) and now offers DAs across many subjects, including engineering, health and well-being, and social work. DAs are at the center of the university’s forthcoming employability strategy and feed into Warwick’s strategic priorities of innovation, inclusion, and regional leadership. The university hosts around 600 DAs, of whom around 400 are at WMG.

Warwick DAs are collaboratively organized between the university and employers. They are coordinated by the university’s central DA team, and WMG has its own DA team that works with the central team. Warwick DA students spend around 20 percent of their time at the university and 80 percent working for their employer, where they apply the knowledge they develop on their courses.

For DA students, the advantages of doing a DA are the opportunity to “earn while you learn,” to avoid amassing debt during higher education, and to earn a salary set by the employers. Students also develop skills that make them more employable, though it is currently not possible to give DA employability outcomes at Warwick (the courses have been in place for only a short time, and too few people have completed their DAs).

Through DAs, employers can address perceived skill gaps by developing courses that address their needs. Furthermore, employers can benefit from improved employee loyalty (although DA students can change their employer at any time). But not all DA students are new recruits of school leaver age. Some are current employees because there is no age eligibility criterion for entering a DA.

The best practice around DAs at Warwick is centered on improving the student experience. To this end, the central DA team widened participation initiatives across the university and developed a work-based learning framework. Both these practices were driven by the introduction of DAs and have wide benefits to all students.

Recent Reforms Aim to Address Some of These Challenges

The government's **latest reforms to apprenticeships have been wide ranging**, described by the government as the largest ever (DFE 2018). Three elements in particular have attracted much debate: the introduction of the Apprenticeship Levy, initially comprising a tax of 0.5 percent of the total pay bill of all employers with an annual pay bill of more than £3 million; the shift away from apprenticeship frameworks to employer-designed standards; and the strengthening of end point assessment.

Education and training professionals welcome the levy in that it increases the overall amount of funding available for apprenticeships. It should be noted, however, that **the levy represents significant savings to the Treasury**. An apprenticeship bill of some £1.6 billion from general taxation has been replaced by a hypothecated tax on employers. Levy-paying employers can use the funds for their own training, but if unused after 24 months, the funds are reclaimed by Her Majesty's Revenue and Customs to subsidize training elsewhere in the sector.

But employer groups have been critical. A survey of more than 1,400 businesspeople by the British Chambers of Commerce and Middlesex University in July 2017 found that 23 percent of firms due to pay the levy did not understand it or did not know how they would respond to it (BCC, n.d.). Worryingly, **more than 4 in 10 employers either planned to write off the levy as a tax (19 percent) or said they don't know (22 percent)**. These surveys were conducted only a few months after the levy was introduced, so confusion and uncertainty might be expected.

The government has taken note of some of these concerns. The chancellor of the exchequer, who oversees government spending, announced in October 2018 that large employers will be able to share more of their levy budget with their partners and supply chain than before, increasing from 10 percent of their levy pot to 25 percent. Some have suggested that the shift to high-level apprenticeships and the increase in costly management apprenticeships are factors in escalating program costs. Management apprenticeships have grown from around 1 in 10 apprenticeship starts in 2015–16 to around 1 in 5 in 2017–18, some of which are subsidized to the value of £27,000 (BCC, n.d.).

In principle, the move to apprenticeship standards that would give employers greater control over training content was largely welcomed, but implementation has proved challenging. The transition is continuing, with all new apprenticeship starts to be on the new standards by September 2020 (three years later than the original goal).

One area of concern with the new standards has been around the flexibility of the government's definition. Although the standards are a deliberate part of the government's strategy—designed to enable industry to take the lead—some commentators are **concerned that some employers are exploiting the flexibility to create lower-quality qualifications** that nonetheless attract subsidies. The think tank Reform has argued that the government's definition amounts to “any job with training” and transferrable skills that lasts for at least 12 months, far below the requirements set by the International Labour Organization, which specify a particular skill level (“intermediate occupation”) and the need for a “systematic” training plan focused on “young people” (Richmond 2018).

With the removal of the National Occupational Standards system in England, there is also now **no system that relates apprenticeships to each other or to a standard occupation classification**, potentially making for a more confusing picture for young people, parents, and career guidance professionals.

Lessons and Recommendations

Many apprenticeship opportunities should be available to young people, but **we recommend against numerical targets for volumes**, as they tend to drive behavior to achieve quantity over quality. Instead, by driving up quality, the confidence of businesses and young people in the system will grow over time, which will increase quality in a sustainable and effective way. Instead of numerical targets, indicators related to quality, including feedback from apprentices and employers and the completion rate, would be more effective measures.

As the examples from Jersey, Northern Ireland, and Australia show, there is a strong case for **including mentoring within apprenticeships** to help young people overcome any barriers they face and to help them to reflect on and bring together the different elements of their apprenticeship, maximizing their learning and the development of transferable skills. This will increase the completion rate, resulting in more positive outcomes for apprentices and employers alike.

It is important to ensure a **thorough but simple quality-monitoring system** for apprenticeships. There is no shortage of organizations involved in the process in the English system. The Department for Education examines the quality of the whole system; the Office for Standards in Education, Children's Services, and Skills and the Quality Assurance Agency for Higher Education measure the quality of provision; and the Office of Qualifications and Examinations Regulation looks at the quality of

qualifications within frameworks and standards. We recommend that a single organization take on quality control with the ability to set the success criteria for the apprenticeship system.

Looking at quality in terms of breadth, employers and providers like the Eden Project offer high-quality apprenticeships that give apprentices a broad introduction before they specialize. This approach is to be encouraged, and we recommend **broadening apprenticeship training and including transferable metaskills in every apprenticeship**. This would mean including a significant proportion of off-the-job training, as Field's contribution suggests, and making apprenticeships expansive rather than restrictive, according to the matrix set out in Unwin and Fuller's research.

Finally, we want to see **degree apprenticeship opportunities increase**, building on examples like Warwick University and those from Hordern and Bishop's research. We recommend these be part of a rich higher education offer, with some of the key lessons from degree apprenticeships being reflected in wider higher education courses through project-based learning and real employer engagement, creating a continuum of provision to suit the needs of various young people and businesses.

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Firefighting Goes Beyond Extinguishing Flames: Inside the Admirable Vocation

Nicholas Wyman

Firefighters. They are different than the rest of us. While others run away from a burning building, they race toward it. They hold the line against raging wildfires, pull people from burning buildings, and deal with all types of disasters, including floods, traffic accidents, and chemical spills. When someone has a medical emergency, firefighters are often the first to respond. But for most firefighters, it's not just a good job—it's a calling.

It's easy to forget about these public servants and what they do every day to protect our lives and property. Easy, that is, until we need them. That was my experience when my 6-year-old, James, took a nosedive, badly gashing his chin. Blood, wailing, and pandemonium followed. Minutes after I dialed 911, a local fire crew and emergency medical technicians arrived to take control of the situation. When the dust had settled, James had seven stitches in his chin, a kid's fireman's helmet on his head, and a "bravery" award on his shirt. And my family had a new respect for firefighters and other first responders.

My passion involves helping young people find pathways to satisfying, skill-based careers. So I naturally found myself thinking about those two firefighters and about the other men and women who devote their working lives to helping others in stressful situations. What are their jobs like? How do they learn to do their work with such cool heads and professionalism?

I learned that firefighters are among the best-trained and most respected public servants. They are also well paid, with compensation in some communities ranging from \$40,000 for newcomers to more than \$120,000 for experienced people—not bad for a vocation that does not require a four-year college degree. And for those who want to advance within the field, many career paths are available. Firefighters can earn promotions to become an engineer, lieutenant, captain, battalion chief, assistant chief, deputy chief, or chief. With further training, they may become fire inspectors, arson investigators, fire marshals, or fire protection engineers. Many earn associate's and bachelor's degrees in fire science, paramedics, and public administration or pursue bachelor's and master's degrees in forestry with a firefighting or environmental focus.

This Isn't a 9-to-5 Job

In California, for example, most firefighters work 24-hour shifts, with 48 or 72 hours off. When wildland blazes are on the move, companies of men and women are on the fire lines most of the day and night, sometimes for a week or more, until the fire is under control. In 2018, the deadliest and most

destructive fire season in California’s history, many firefighters to worked 30 days in a row, rested for 2 days, and returned to work for another month. When initially responding to the deadly Camp Fire in northern California, Marin County strike crews worked on the fire line for 4 straight days in 24-hours-on, 24-hours-off shifts. Coping with the rigors of this work requires technical expertise, physical strength, and the ability to stay level-headed in dangerous situations.

Firefighting goes beyond the traditional business of “putting wet stuff on the red stuff.” In fact, fires account for only around 4 percent of all incident responses by firefighters nationwide. Around 65 percent of responses are emergency medical service calls, and fire departments are often the first to arrive on the scene. Today’s fire professionals deal with hazardous waste spills, traffic accidents, natural catastrophes, active shooter events, and medical emergencies. When not responding to emergencies, they spend time maintaining emergency vehicles, performing preventive fire maintenance, teaching fire safety at schools and businesses, and working with local, state, and federal officials to prepare for widespread incidents.

As fire departments around the country have learned, continual training is the best way to prepare people for such varied responsibilities and for ensuring a safe work environment. Maintaining uniformly high-quality training, however, is a challenge. That is especially true in a big state like California, which has more than 200 professional municipal fire departments, as well as volunteer departments in rural communities. The larger municipal departments operate their own training academies. Others look to fire academies in local community colleges for basic training. In fact, most departments now expect job candidates to have completed firefighting coursework—and to have earned emergency medical technician certification—before applying.

But Training Doesn’t Stop There

More than half of California’s professional fire departments provide ongoing training through a state registered apprenticeship program that involves more than 7,000 men and women. That program offers apprenticeships in occupational fields that include paramedic, hazardous materials, fire officer, fire inspector, and 14 others. Each combines classroom and on-the-job training under the California Firefighter Joint Apprenticeship Committee (Cal-JAC), a decades-old collaboration of the Office of the State Fire Marshal and California Professional Firefighters, the state firefighters union. Each year, Cal-JAC helps California fire departments fund and deliver more than a million hours of education and training for firefighters. Cal-JAC also provides specialty training in terrorism consequence management, unified response to violent incidents, and fighting wildfires. This management-labor collaboration ensures that training is consistently high quality and that it addresses the challenges firefighters experience in their work. It also provides some training cost reimbursement to cash-strapped fire departments.

In 2005, Cal-JAC initiated the first statewide recruitment effort targeting women and minorities: the Commission to Recruit Women for the Fire Service. Composed of high-ranking female firefighters, the commission provides outreach and education about opportunities within the profession to women in high school and college, as well as female military veterans. The commission currently includes the first African American woman hired by the Los Angeles City Fire Department and has included Berkeley's first female fire chief and the first African American fire chief in California.

In addition to training, Cal-JAC and the Women's Commission have implemented a groundbreaking mentoring program to train and support new recruits. A mentor is assigned to each new recruit to guide them throughout their early hiring and probationary periods. Mentors support recruits both formally and informally, providing not only technical expertise but crucial guidance and encouragement outside the training ground. The program reduces hiring and training costs for the department and provides greater potential for promotion and career longevity, as well as educational and emotional support.

Since the incident with my son, what I've learned about firefighters has changed the way I think about the men and women who follow that calling. They are among our most highly trained public servants. And all that training is essential because the demands of the job are nearly unparalleled. Firefighters need not only high levels of technical and applied skill on the ground, and they need to be effective and compassionate communicators. They require cool-headed decisionmaking skills in extreme crisis situations and incredible amounts of stamina, dedication, and courage.

And though they may never receive the social prestige or earn the princely sums paid to doctors and surgeons, they get the satisfaction of saving lives and helping people in difficult situations—something few of us will ever experience. Theirs is one of those admirable vocations that is often hidden in plain sight.

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Collaborating on Implementing Apprenticeships: Promises, Challenges, and Solutions for Managing Networks

Johann Fortwengel

Apprenticeship training is critical to creating the necessary skills for businesses to thrive and grow, for regions to have a productive workforce and low unemployment, and for workers to have well-paying jobs and fulfilling and stable middle-class careers. But implementing an apprenticeship program can be daunting for businesses. This is true in particular for small and medium-size enterprises (SMEs) that might lack the resources and staff to design, recruit for, implement, and monitor a program. Many firms shy away from offering apprenticeships and miss the opportunity to build a sustainable pipeline of talent. This decision increases the costs of recruiting new and retaining current staff, and vacancies remain open longer, hurting productivity, growth, and overall success.

Teaming up with other businesses offers a solution here. Forming or joining an interorganizational network lowers the barrier to entry into an apprenticeship program because a network can reduce the burden for each individual firm and reduce the hurdle to offering apprenticeship. Networks are not only for SMEs. Big firms can also benefit from these partnerships. For example, individual sites of large companies might not be large and may have the demand for only a few apprentices each year. Joining a network can help these sites reach the necessary scale in numbers and critical mass to have sufficient clout to negotiate more tailor-made classes with a local technical or community college.

In a 2018 survey of businesses in the US, we found that almost one in four businesses had more than 10 vacancies, mostly because of a skills shortage. Apprenticeship can help fight this skills gap (Powell and Fortwengel 2014).

Also worrying is that slightly more than half the surveyed firms had to adapt their production process because of the lack of skills. Firms in this situation cannot reach their full productivity potential, holding back their growth and profitability.

For these reasons, businesses are increasingly considering apprenticeship. Many businesses already opt for a partnership approach to solve their skills gap. These partnerships involve networks comprising private firms, public organizations, and technical or community colleges. Interorganizational networks offer a viable pathway in many sectors, such as manufacturing, health care, or information technology (IT), and they can accommodate different approaches in terms of recruiting apprentices. Many firms seek to build a sustainable stream of new talent using apprenticeship, recruiting apprentices out of high school or technical or community colleges. Other firms use apprenticeship to further train their existing workforce to improve productivity and invest in workers' further education, which improves morale and

well-being. Finally, some organizations target veterans as potential apprentices, and veteran-based apprenticeship programs too can be organized within a network of firms.

To further reduce administrative and cost burdens, networks can hire an intermediary organization to run day-to-day activities and manage the network. This chapter introduces the idea of using networks for apprenticeship and discusses promises, challenges, and solutions.

Promises

Forming and maintaining an interorganizational network that collaborates to offer apprenticeship has multiple advantages.

For *businesses*, it spreads the burden and increases efficiency. Promoting the program and engaging in marketing is easier if multiple partners, as opposed to one business alone, do it simultaneously. Strength in numbers is a significant advantage in an environment like the US, where apprenticeship is a little-used alternative to the common four-year-college pathway. High school students, as well as their friends, teachers, and parents, are still not fully aware of the opportunities apprenticeship offers: a good chance of a job, no student debt, and a pathway into a middle-class career. This message can be spread effectively and widely through a network.

Also, if a business seeks to recruit only one or two apprentices a year, collaborating with other businesses that have similar needs helps them attain a critical mass. Nearly 60 percent of the firms we surveyed recruited only one to three apprentices a year, so teaming up is a promising solution for a large number of businesses. Local technical or community colleges will be more responsive to requests for adapting a curriculum when they are approached by a group recruiting 15 or 20 students a year, as opposed to an individual firm recruiting only 1 or 2. This flexibility for the college is particularly helpful for planning schedules around the preferred cycle of theoretical instruction at the college and practical training in the firm. Some businesses may prefer their apprentices go to school one or two days a week and work the rest of the time. Others may prefer a longer cycle, perhaps have their apprentices go to the college for a few weeks in a row and then come to work for a few weeks. Having a critical mass as part of a network will make it worthwhile and economically viable for a college to be responsive to these more specific requests.

For *colleges*, dealing with a network of firms, as opposed to individual firms case by case, is better. Having one contact instead of multiple contacts reduces coordination costs. More broadly, collaborating with a network creates a more reliable stream of income in the form of tuition fees. Single firms might discontinue their program or fail to recruit an apprentice every year. When a college deals with a network, it can invest more time and resources to design a curriculum because it can expect a sustainable and long-term relationship, including a predictable yearly intake of student apprentices.

Furthermore, students in apprenticeship programs have high completion rates and good prospects for a smooth transition into stable and full-time employment once they graduate. Completion rates and transitions into employment are both important performance metrics for colleges, and collaborating with a network helps them perform better in these domains.

There are also positive reputational effects of being associated with a network. The firms and the college enjoy greater clout and increased visibility, and these relationships promote the college to important stakeholders, including other firms and policymakers.

For *policymakers*, networks have unique advantages as well. An increasingly important factor for firms deciding where to locate or expand their business is the availability of talent. Having a network gives a region or a state a good practice case to point to, which can attract foreign and domestic direct investment. Furthermore, these networks can be an integral part of economic development. For example, regions with a strong manufacturing base can form and maintain a network of firms training apprentices in manufacturing-related occupations, such as mechatronics. This way, the network helps create and sustain a competitive advantage in this particular industry. Policymakers can facilitate networks to benefit from the long-term positive effects of having a well-trained workforce, stable middle-class careers, and low unemployment locally, especially among youth.

Challenges

Though they offer advantages, networks also face challenges. One is that a diverse pool of firms needs to agree on a common occupational profile and on a largely standardized curriculum, including a harmonized school schedule. But experience shows that although firms often start these discussions thinking they are special and have unique needs, it often turns out that there is common ground on which a compromise can be reached. Here, general and broad programs are particularly likely to be attractive to a broad set of firms. For example, many firms need a mechatronics or machining program, regardless of their size or product offerings. Furthermore, the option exists to complement this shared curriculum by adding one or two more specific classes that teach content of interest to only a few partners. In fact, being part of a network opens up the opportunity to benefit from the knowledge and capabilities of partner firms. For example, firms could offer short courses to train apprentices from other firms in their domain of expertise. Building a collaborative relationship that spans different aspects of workforce education and training can increase the network's benefits for each individual member.

Differences between firms also include size. Collaborations between small and big firms need to be managed carefully because they often have different levels of resources. Big firms can often design and offer sophisticated practical training programs internally, while SMEs often lack the necessary resources and instead need to train their apprentices in a more unstructured way on the job. Furthermore, big firms often are organized in a more bureaucratic and hierarchical manner, while SMEs

are more flexible in coming up with creative solutions. Firms entering relationships with businesses of other sizes should be aware of these implications, and they need to understand each other's constraints and limitations—SMEs in terms of their lack of resources, including human and financial resources, and big firms in terms of their managerial and practical inflexibility.¹

Another challenge is that firms often differ in their wage structure, and their apprentices are likely to have different pay and benefit packages. This difference needs to be managed carefully so partners do not compete for apprentices by outbidding each other, which would not only increase costs but hurt morale among the apprentices.

More broadly, a key theme in networks is the tension between cooperating and competing—a challenge often captured with the term “coopetition.” For example, although network members often recruit together for the network, they obviously still compete for the best and most promising candidates. Below are possible solutions for managing networks and realizing the promise of using networks for apprenticeship programs.

Solutions

In this section, I discuss how businesses can make networks work. I also discuss how policymakers can create and sustain networks so many stakeholders can benefit.

Implications for Businesses

Networks should have branding, and partner firms should come up with a brand name for the network separate from their own names. For example, the network could use the name of the state fused with a term describing the network's focus in terms of sector (e.g., manufacturing or health care) or of occupational profile (e.g., mechatronics or machining). Having a strong brand name will help generate a strong identity, which is important for creating loyalty and commitment within the network and for brand recognition for external stakeholders, such as colleges, high schools, and apprentices and their parents.

One way to promote the offer to students and their parents is to integrate college credits into the program, allowing apprentices the option to continue their education and obtain a four-year degree later on. This integration is critical to attract highly qualified and talented apprentices, and it opens up the possibility for further education later in the career. This way, apprenticeship can be “sold” as a stepping stone into a career, as opposed to what it is often perceived as: a dead end. Allowing apprentices to get college credits as part of their training is powerful in overcoming this barrier.

A key part of solving some of the challenges in managing networks is to agree on rules for the network. This includes deciding how suitable candidates are to be distributed across the member firms and how pay and benefit packages are to be designed.

Pay and benefits packages will likely differ across partners. Large firms often pay more and have more generous benefit packages. But network members should have packages in the same ballpark so apprentices are not lured to a specific high-paying company within the partnership, which could undermine collaboration or lead to the network's collapse. Openly talking about pay and benefits early in the process of forming the network will prevent problems later on.

Furthermore, it is critical to have rules in place to govern how qualified candidates are selected and distributed. To fully benefit from being part of a network, members should recruit for the network as a whole, instead of for their own firms. This raises questions about how interested and suitable candidates should be distributed among partners, given that they have been recruited on behalf of the network. As part of this process, firms should list their top three candidates, and candidates should list their top three employers. Although the process might not always result in perfect matches, the network could distribute the candidates to employers based on these lists of preferences. This should be done in a manner transparent for both the firms and the candidates.

To minimize competition within the network, selecting appropriate firms is critical. Firms should share some common skill needs and demands but should not be direct competitors. It makes sense to recruit businesses in the same sector, such as manufacturing or health care, because they will agree on a common occupational profile that is of use to all businesses. But the firms should not directly compete against each other, because this could threaten network collaboration. It is difficult to cooperate with a firm in one area but compete with the same firm on the marketplace for customers. Conversely, it is useful to cooperate in multiple domains. For example, firms that already work together in the sense of one firm being a supplier to another might be well positioned to extend their cooperation to apprenticeship. This would have the added advantage that it can contribute to meeting necessary quality standards throughout the local supply chain.

Networks must decide whether to hire an intermediary organization to take care of the daily tasks of running a network. These tasks can involve liaising with the college (or the department of labor, if the program is registered), scheduling meetings and writing memos, and making sure the network runs smoothly. In large networks of, say, at least six partner firms, using such an intermediary or administrative organization makes economic sense, because private firms often have limited resources only to manage a network, and managing large networks is complex and time-intensive. One way to raise funds to hire an intermediary organization would be to ask each network member to pay a yearly membership fee. Consultancy companies, project management firms, chambers of commerce, or business associations might offer this service for a fee. For example, the German American Chambers of Commerce in the US have specialized departments offering network creation and management.

It is also important to think about the network's size. If the network includes too many firms, coordination costs will increase possibly to a prohibitively high level. Furthermore, the necessary level of trust and close social relationships between firm-level managers cannot easily be attained in large networks. Therefore, it is advisable to cap the number of firms, perhaps at 12. Any growth beyond around 12 firms should encourage the formation of subgroups loosely connected with the founding network. Firms could be assigned to different subgroups depending on their location within a region or based on sector. This way, the model can grow and benefit from the various advantages offered by close and cohesive relationships.

Implications for Policymakers

Networks have unique advantages for building a sustainable pipeline of skilled workers for businesses and offering great career prospects for the local population, contributing to a healthy economy overall. Individual programs by single firms are less sustainable. A firm with its own program might run into economic difficulties or choose not to offer apprenticeships in a given year. Networks, on the other hand, do not depend on a single firm recruiting each year. Local partnership-based solutions thus make a valuable contribution to regional economic development, including the generation of a suitable workforce.

Policymaking at the federal, state, and county levels should support these arrangements.² Government officials can design funding programs that provide incentives for forming and maintaining these network arrangements. For example, set-up costs could be covered through a program that would fund network management for the first year or two. Similarly, tax breaks could be introduced for companies participating in a network and could be structured in a way to reduce the company's general tax burden, or they could be linked to the number of apprentices recruited through the partnership. South Carolina has introduced such a tax break, though it is not linked to networks. But supporting networks in a strategic and targeted manner makes sense politically and economically because it helps SMEs in particular. SMEs are the backbone of the American economy, and they recruit, train, and employ much of the local workforce. Implementing programs helping networks only, as opposed to programs run by a single company alone, can be sensible workforce and economic policy.

TABLE 1

Checklist for Businesses: Things to Consider When Forming an Interorganizational Network for Apprenticeship

Step	Criteria
Selecting business partners	The partners should be in close proximity (e.g., within 20 miles of each other), be part of the same industry (e.g., health care or information technology), and be broadly the same size, but they should not be direct competitors. There should be enough partners to recruit at least 15 apprentices a year.
Selecting community or technical colleges	The colleges should be within reach of all the business partners, should be open to implementing separate classes for the partnership, and should incorporate flexible curriculum design and scheduling around firm preferences.
Deciding whether to select an intermediary organization	Intermediary organizations are useful for networks with at least six member firms. The organization would manage the partnership, including liaising between business partners and the college. Registering the apprenticeship program with the US Department of Labor would provide an additional champion to promote the network and the program.
Financing the network	Members could pay a one-time entrance fee or a yearly membership fee to finance the intermediary organization's services, a website, promotional materials, and the like.
Foundations of the network	The partners need to trust and be open with one another and have the willingness to make it work. The network should develop flexibility to adapt rules and procedures along the way to see what does and does not work.

Notes

- 1 Johann Fortwengel and Jörg Sydow, "Why Goliaths and Davids Are Poor Network Partners," *Ideas for Leaders*, accessed August 22, 2019, <https://www.ideasforleaders.com/ideas/why-goliaths-and-davids-are-poor-network-partners>.
- 2 Johann Fortwengel, "Apprenticeships in America: Four Ways to Get the Country to Take Them Seriously," *The Conversation*, November 21, 2018, <https://theconversation.com/apprenticeships-in-america-four-ways-to-get-the-country-to-take-them-seriously-106822>.

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Apprenticeship in the Transportation, Distribution, and Logistics Sector

Katie Adams

The transportation, distribution, and logistics (TDL) sector represents our country's economic backbone but remains a hidden hub of innovation and employment. The history of American economic growth and global competitive advantage follows the evolution of the movement of goods by multimodal and intermodal forms of transportation (e.g., water, air, rail, and highway). But as transportation modalities and technologies change, so do the sector's workforce needs. A growing number of TDL companies are looking for skilled, work-ready, and technologically adept employees to build a sustainable competitive advantage. But the sector faces fierce competition on many fronts. In an economy with near-zero unemployment, TDL companies must compete with other sectors and industries for work-ready employees. In addition, disruptive and previously dependent (not competitive) employers such as Amazon and Walmart are reshaping the sector's service delivery landscape. And an increasingly outdated perception of the sector as offering primarily low-skill or blue-collar jobs lacking opportunity for advancement is a hurdle for attracting young workers. Apprenticeship represents a high-value workforce development strategy that can address the sector's talent pipeline challenges.

The History of the TDL Sector

America's history is the history of its transportation systems. Colonial commerce depended on slow-moving horse-drawn carriages and months-long interoceanic shipping routes. The advent of rail and the steamship in the late 1800s accelerated business owners' ability to ship goods domestically, while the development of commercial aviation and particularly all-cargo shipping after World War I opened the global market for goods while reducing shipping times, increasing profitability and growth (Popescu, Keskinochak, and al Mutawaly 2011).

Up until the disruptive, decentralizing force of the internet and the explosion of e-commerce starting in the late 1990s, the TDL sector's employment base could be loosely divided into two primary "buckets"—a predominant pool of skilled trade or blue-collar occupations (e.g., truck drivers, able seaman, longshoremen, and rail technicians) and a smaller pool of managerial or professional occupations (e.g., warehouse supervisors, managers, and salespeople). But the sector is rapidly incorporating automation, robotics, and artificial intelligence (AI), which demand greater knowledge and technical ability from workers at every level. The eventual full-scale adoption of these technologies combined with the rapidly approaching reality of the internet of things (i.e., everyday objects are embedded with digital technology, enabling them to independently generate production demands without human interaction) means that TDL companies will need a skilled, nimble workforce to ensure

they can remain connected, secure, and able to adapt to ever-evolving consumer demands. A significant challenge is that the sector's approach to attracting, training, and retaining its workforce has not evolved as quickly as its use of technology.

Apprenticeship in TDL: Success in Developing Merchant Mariners at the Seafarers International Union

Historically, there has been little awareness and adoption of apprenticeship within TDL as a tool for workforce development. Employers with registered apprenticeship programs have focused on “operator” occupations (e.g., commercial driver's license truck drivers, transit bus drivers, and able seaman) and skilled trade support occupations (e.g., welders, diesel mechanics, and electricians). Although apprenticeship has had limited long-term or widespread use in the sector, a few outliers demonstrate the sector's effectiveness in meeting targeted occupational needs.

One of the longest-running and most successful maritime transportation industry apprenticeship programs is the Seafarers International Union (SIU) Unlicensed Apprentice Program. Since 1967, the program has used the US Department of Labor (DOL) registered apprenticeship model to equip and educate applicants often entering the merchant marine industry with little or no related previous work experience and potentially no or limited postsecondary education. The union program provides employers a sustained pipeline of entry-level mariners. The merchant marine industry transports cargo and passengers on privately owned (sometimes federally owned) ships and supports the US military by delivering military personnel, equipment, or supplies. In 2016, Paul Jaenichen, administrator of the US Maritime Administration, warned legislators that the nation's maritime industry projected needing 70,000 new workers by 2022, but the seven federal maritime academies graduate only 900 commissioned officers who can work as ship captains or engineers.¹ There is a greater need for low-level merchant mariner occupations that do not require a college degree. Community college maritime training programs, privately sponsored training programs, and union programs (e.g., SIU's program) can produce the nonofficer employees the industry needs.

After applicants are accepted into the SIU program, they report to the union's Paul Hall Center for Maritime Training and Education in Piney Point, Maryland. During their apprenticeship, they live in on-campus dormitories, wear union-issued uniforms, and adhere to a military-style structured environment and training routine. SIU apprentices go through a four-phase program. In the first and second phases, apprentices complete foundational classwork at the Piney Point campus and then spend 90 days at sea, learning and working on board a ship in each of the three ship-board departments: deck, engine, and steward. After returning to shore, apprentices declare their chosen department and then take classes (the third phase) specializing in that area. The fourth phase is another 120 days at sea working in their chosen department. After completing their at-sea work, SIU apprentices have the education, experience, and credentials to begin work as a merchant mariner. In addition to earning their DOL

Journeyworker credential, apprentice graduates have key credentials, including their Merchant Mariner Credential and the at-sea time experience required by the US Coast Guard to work on merchant marine vessels.

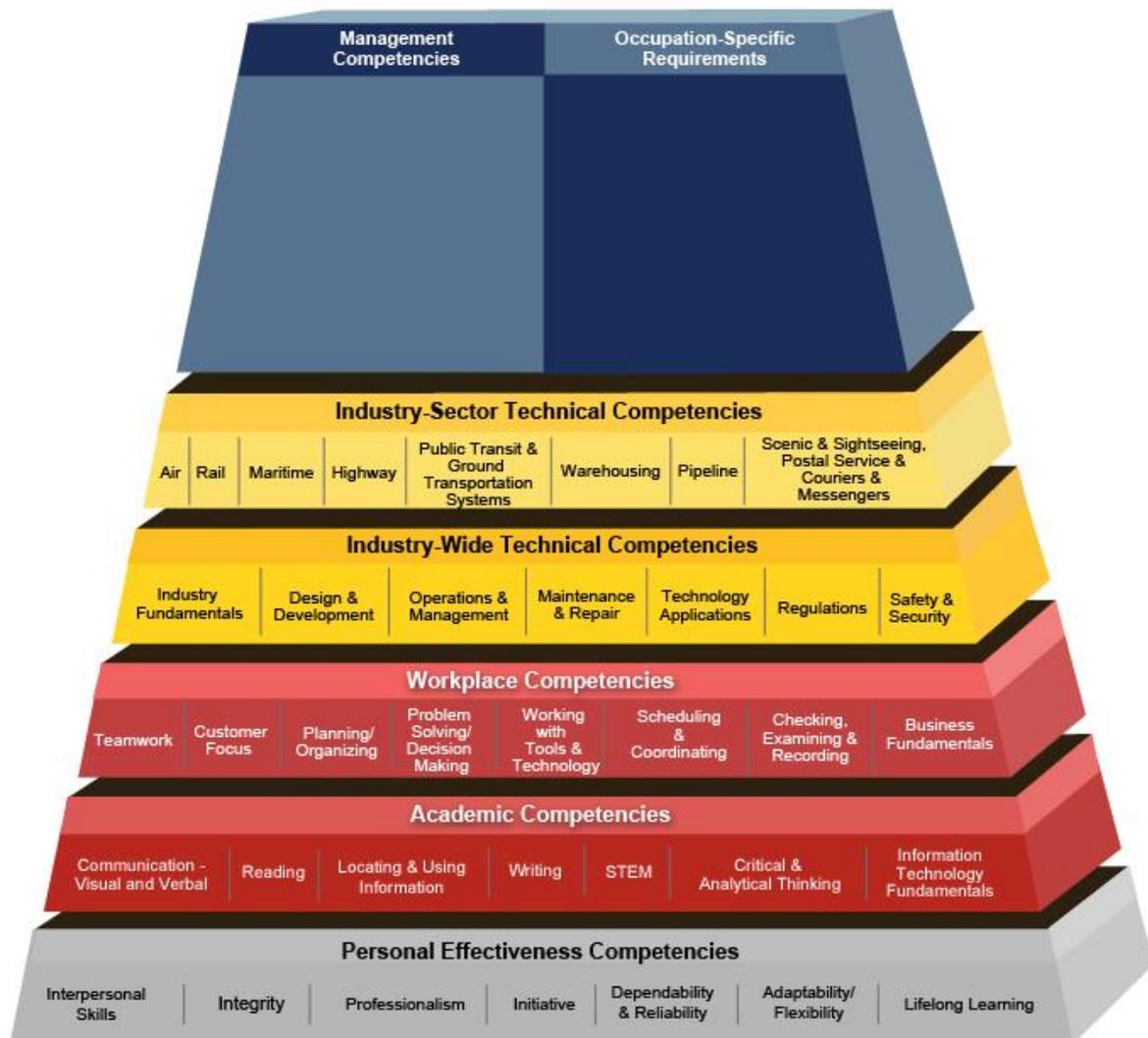
Through a partnership the union has with the College of Southern Maryland, SIU unlicensed apprentices can earn college credit for the classes they take at the Paul Hall Center during their apprenticeship. Apprentices can apply those credits toward an associate's degree through an agreement the union has with the college. After completing the Unlicensed Apprentice program, mariners can live anywhere in the US and obtain work through the SIU, as it contracts with partner employers. In addition, program completers can return to the Paul Hall Center to take courses toward additional certifications and valuable industry endorsements.

The SIU program provides US merchant marine employers skilled, experienced, and credentialed workers for vital occupations. The SIU program is considered the gold standard for merchant mariner workforce training and development, but the earn-and-learn apprenticeship program model can be used by training providers and community or technical colleges serving industry maritime employers in their area.

Expanding Apprenticeship Awareness with the Updated TDL Competency Model

In 2013–14, DOL convened a working group of sector and labor leaders to update its TDL competency model. The result was a more closely industry-aligned competency model that includes background on specific transportation sectors and modifications updating key competencies. The new competency model is the basis for developing secondary and postsecondary career pathway models, academic programs, courses, and curricula, as well as the work processes required in outlining on-the-job learning tasks in a registered apprenticeship program.

FIGURE 1
Transportation, Distribution, and Logistics Competency Model



Source: “Transportation, Distribution, and Logistics Competency Model,” Competency Model Clearinghouse, accessed October 15, 2019, <https://www.careeronestop.org/competencymodel/competency-models/transportation.aspx>.

The newly revised TDL competency model work coincided with an uptick in the Obama administration’s interest in apprenticeship as a workforce development strategy that American industries could adopt to meet in-demand occupational needs and close the skills gap. Within two years of releasing the newly revised TDL competency model, DOL awarded \$90 million in grant and contract funding to states and national industry organizations to rapidly expand apprenticeship opportunities.

TransPORTs, a South Central Louisiana Technical College initiative, was one of the five-year national industry intermediary contracts DOL awarded to expand apprenticeship nationwide. Beginning in September 2016, TransPORTs was tasked with providing technical assistance, program

support, and limited incentive funding to TDL employers, industry intermediaries, and partnering community colleges to create new or expand registered apprenticeship programs across the US. The concept was to take apprenticeship models that had met occupational needs (e.g., SIU's Unlicensed Apprentice Program) to a broader set of employers across the TDL sector and to a broader set of occupations.

Adopting Apprenticeship to Develop the Next Generation of Workers

The federal government's support for advancing apprenticeship and TransPORTs' funded work within the TDL sector emerged at a critical point. The sector's workforce is dominated by baby boomers. With students predominantly choosing to attend four-year colleges after high school, the sector has failed to generate widespread career awareness to drive interest or preference among young workers. Factor in a near-full-employment economy at a time when the projected employment change just for the warehouse and storage industry is expected to increase an average of 26 percent by 2020, the need for not only bringing in new hires but cross-training incumbent workers becomes clear.² The rapid expansion of e-commerce and the resulting drive for greater and faster TDL services will continue unabated for the foreseeable future. The alignment of these forces is prompting employers to look at apprenticeship as a recruiting, training, and retention tool.

The commercial trucking industry is a prime example of a TDL sector segment adopting apprenticeship to meet current and projected workforce needs. According to the American Trucking Associations, the average truck driver is between 49 and 55 years old (Costello and Suarez 2015). Although goods may enter or cross the US by cargo ship, plane, or rail, virtually all supply chains require at least "last-mile trucking" to transport goods to consumers or retail stores. As e-commerce accelerates demand for near-real-time delivery of goods, most employees in this space are overwhelmingly heading for retirement. As the industry tries to rebrand itself to attract a younger and more diverse workforce, employers are also looking for effective methods to train workers not only as drivers but within driver-supporting skilled trade occupations, such as diesel mechanics. Companies such as industry giant KLLM Transport Services are using innovative partnerships to meet the nation's truck driver shortage through apprenticeship. In 2014, the company teamed up with Hinds Community College's Career and Technical Education Division in Jackson, Mississippi, to open a KLLM Driving Academy. Apprentices receive their on-the-job learning through full-time work for KLLM and complete their required related technical instruction (RTI) at the Driving Academy. Upon program completion, participants earn a DOL Journeyworker credential and college credits for completed RTI through Hinds online business courses.³ The college offsets a portion of its program costs—primarily for instructors' salaries and simulator equipment—through funding from a \$2.3 million DOL Trade Adjustment Assistance

Community College and Career Training grant to the Mississippi River Transportation, Distribution, and Logistics Consortium.⁴

Trucking companies are not the only ones using apprenticeship for driver training and workforce development. In May 2019, TravelCenters of America became a DOL registered apprenticeship program sponsor. Participating workers can become diesel technicians while gaining critical mechanical, computer maintenance, and repair skills required to keep advanced heavy-duty trucks moving goods along American highways. The program offers new hires and incumbents the opportunity to become master diesel technicians (a DOL Journeyworker Diesel Technician credential) with one to three years of on-the-job learning, depending on the applicant's skill level before the program. By using a hybrid approach to training, the company can award credit for previous experience or related education, which can accelerate program completion. Apprentices earn a full-time salary and benefits while learning on the job at a TravelCenters of America Truck Service facility under a supervising mentor.

Rapid Technology Adoption Forces Employers to Find Customizable Models of Workforce Training

Although TDL employers are using apprenticeship for “operational” occupations, the structured model for workforce development holds enormous potential for employers facing new occupational needs. A critical aspect of e-commerce's massive disruption of the TDL sector is the near-wholesale adoption of digitally driven physical environments. The change is creating new occupational needs. Although warehouses began integrating initial forms of technology (e.g., the forklift) in the early 1900s, it wasn't until the early 1980s that a steady stream of digital technology began reshaping the warehouse workspace. Barcoding inventory and implementing computer warehouse management systems became the norm, setting the stage for the digital integration found in today's nearly completely automated distribution centers. Amazon alone has more than 100 fulfillment centers, which average more than 1 million square feet each. These centers are scattered strategically nationwide to reduce in-transit time for the nearly 50 percent of Americans who are Amazon Prime members in large part for the two-day shipping services (Rutter et al. 2017).

As companies reimagine the warehousing environment using automation, robotics, and artificial intelligence to reduce the number of “employee touches” associated with product movement, they will need more highly skilled and highly educated technicians to use, repair, and maintain robotic or automated equipment. For example, robotic technology now enables warehousing companies to have fully automated truck-unloading systems integrated with robotic palletizing systems to offload, sort, and label products for storage. Amazon's ability to guarantee two-day shipping (and increasingly one-day shipping) is largely because of its revolutionary integration of computer automation into the fulfillment process. The company acquired the robotic vehicle manufacturer Kiva Systems in 2012 and now deploys up to 1,000 small Kiva robots in its massive automated facilities to do everything from sort

packages to store inventory. This technology is displacing material-handling jobs but has created a new demand for skilled technicians who can service, repair, program, and maintain equipment. Electromechanical, robotics, software, and engineering technicians are all required to keep the distribution and fulfillment centers operating at all hours every day.

Because apprenticeship is a training model driven and customized by the sponsoring employer, it can be adapted to integrate new technologies, cover new skills and competencies, or embed new credentials. Companies can use existing apprenticeship program models as they integrate more automation, providing a pathway for new hires to learn these new and critical technical skills and a method for upskilling incumbent workers interested in a new career pathway or developing new in-demand skills. For example, as warehousing and distribution companies more regularly deploy drones to manage inventory or identify mechanical breakdowns, they could integrate drone information technology and mechanics into an existing electromechanical technician apprenticeship program to provide workers critical knowledge in that new application.

Using Apprenticeship to Create Clear Career Pathways for New or Transitioning Workers

Although today's warehouses are increasingly automated and require fewer low-skilled labor positions than in the past, TDL companies still need to recruit and train for entry- or low-level positions to ensure safe operations and order fulfillment. Apprenticeship can meet that need while providing a clear career pathway. Such pathways have been shown to increase employer preference among young or new workers, which is critical because jobs without clear opportunities or pathways for advancement increase the likelihood of employee turnover. Andrew Chamberlain noted in the *Harvard Business Review* that “workers who stay longer in the same job without a title change are significantly more likely to leave for another company for the next step in their career.”⁵ Using apprenticeship as a clear career pathway tool can reduce the employee turnover that costs businesses 20 percent of an employee's salary.⁶

Americold, the world's largest owner and operator of temperature-controlled facilities and infrastructure, is a DOL registered apprenticeship program sponsor using the training format for low-skilled positions. The company offers apprenticeship programs ideal for people new to the workforce or looking to transition into the industry. Through its two-year Apprentice Technician–Level 2 maintenance worker program, people who meet program entry requirements and have at least a high school diploma (or equivalent) and basic mechanical knowledge and aptitude can gain in-demand basic maintenance skills in electricity, plumbing, refrigeration, ammonia, lift truck, and carpentry, enabling them to move into a full-time Technician 1 position with the company upon completion. Americold launched its one-year Dockworker apprentice program in 2019 using a one-year time-based apprenticeable occupation approved by DOL in 2018. The entry-level occupational program also

provides a structured way to bring new entrants to the sector while allowing the company to build a custom-trained workforce.

Companies sponsoring apprenticeship programs for skilled trade occupations can reap tangible returns on investment by embedding standardized safety training into the on-the-job learning process. *The Benefits and Costs of Apprenticeship: A Business Perspective*, a joint report produced by Case Western Reserve University and the US Department of Commerce, cited survey findings from North America's Building Trades Unions that its employers "earn a return of between \$1.30 and \$3.00 for every \$1.00 invested in craft training due to improved safety, increased worker productivity, and reduction of rework, absenteeism, and turnover" (Helper et al. 2016). Greater productivity and less time lost to equipment being taken off-line for repair because of misuse is critical in fast-paced warehousing environments that rely on full operation to meet customer demands.

Apprenticeship for Professional TDL Occupations

TDL employers, who long thought of apprenticeship as a training model geared solely or predominantly toward workers in skilled trade occupations, are now looking at apprenticeship for developing the next generation of white-collar or no-collar professional workers. As e-commerce pushes TDL employers to integrate new equipment and technologies to reduce delivery time, it is forcing companies to find or train supply chain management professionals to manage complex logistics systems.

Harper College, a DOL registered apprenticeship program sponsor in Illinois, has created a two-year supply chain management and logistics apprenticeship program to help local employers find work-ready, educated workers for these professional positions. Apprentices attend Harper for their credit-bearing RTI on Tuesdays and Thursdays in 12-week blocks each semester and then receive their paid on-the-job learning at their employer's worksite on Mondays, Wednesdays, and Fridays. Program completers earn a DOL Journeyworker certification and an associate's degree in supply chain management. This model allows apprentices to not have to make the often difficult and expensive decision between full-time work or full-time postsecondary education. The industry-responsive training model provides employers a predictable talent pipeline and structured training process while providing apprentices the ability to earn a salary, valuable workplace experience, and an academic credential they can apply toward a bachelor's degree at a four-year university.

Miami Dade College is also leveraging its degree-conferring supply chain management and transportation and logistics program to create apprenticeship programs for local industry partners. In 2018, the college became a DOL registered apprenticeship program sponsor with TransPORTs assistance. The first participating employer in the new "MDC Works" program was Commercial Jet, which is using apprenticeship to recruit and train aircraft structures technicians and assembly technicians. The school expanded its apprenticeship program in spring 2019 with two new professional occupations: customs broker and help desk technician. Given its physical proximity to the Americas,

Miami Dade County is a hub for international trade. The college’s ability to create new programs enabling local TDL employers to recruit and train workers in high-demand professional occupations help employers maintain a long-term competitive advantage.

Moving from the Military into TDL through Apprenticeship

Apprenticeship also offers a valuable tool for recruiting and training key populations. Veterans make up a high-value pool of potential employees for TDL companies. Numerous military occupational specialties directly map to in-demand occupations for which DOL-approved apprenticeable occupational models are already available.

TABLE 1
Sample Military Occupational Specialties Mapping to Department of Labor–Approved Apprenticeable Occupations

Branch	Military rating	TDL occupation(s)
US Navy	Quartermaster (QM)	Deckhand, oiler, tankerman
	Boatswain’s Mate (BM)	Deckhand, mate, rigger, oiler
	Logistics Specialist (LS)	Logistics manager, transportation planner
	Machinist Mate (MM)	Diesel mechanic, industrial maintenance mechanic
US Army	Watercraft Engineer (88L)	Chief mechanic, oiler, wiper
	Motor Transport Operator (88M)	CDL truck driver
	Railway Specialist (88U)	Transportation manager, locomotive engineer, locomotive firer, subway and streetcar operator
	Cargo Specialist (88H)	Cargo or freight agent, warehouse worker, logistics supervisor
US Coast Guard	Electrician’s Mate	Marine electrician
	Maritime Enforcement Specialist	Port security agent
US Marine Corps	Rigid Rating Craft/Boat Coxswain (0314)	Water taxi operator
	Logistics/Embarkation Specialist (0431)	Logistics coordinator
	Avionics/Maintenance Technician (6314)	Avionics technician, aerospace engineering and operations technician, aviation inspector
US Air Force	Traffic Management Helper (2T011)	Freight and cargo inspector

Note: CDL = commercial driver’s licence; TDL = transportation, distribution, and logistics.

With clear road maps from military occupational specialties to in-demand sector occupations, veterans can demonstrate their related experience, skills, and competencies to employers and even quantify the value of their industry-aligned certifications or credentials. Employers can use that validated information to credit a veteran with time toward his or her required on-the-job learning hours (for a time-based or hybrid apprenticeship program) or required RTI for experience or education earned during service, accelerating his or her apprenticeship program completion.

Colleges providing RTI to apprenticeship program sponsors can employ “crosswalks” to further benefit veterans and their employers. Crosswalking is a learning assessment tool that gives colleges a consistent benchmark against which to evaluate a military occupational specialty or credential for college course credit. Colleges can use crosswalks to award veterans participating in a registered apprenticeship program academic credit for prior learning represented by their military occupational specialty or credential, which can also be applied toward their RTI. That credit can be applied toward an academic certificate or degree, putting veterans on an academic pathway they might not have envisioned after leaving the military. Community or technical colleges can extend that academic pathway for veterans by creating articulation agreements with four-year colleges, enabling veterans to apply credit earned through their associate’s degree toward a bachelor’s degree.

San Jacinto College in Houston, Texas, uses military-to-maritime crosswalks to help create a more highly educated and skilled talent pool for its partner employers. The college developed crosswalks from Coast Guard certifications to academic credit for several in-demand occupations. A veteran in a registered apprenticeship program taking RTI at San Jacinto College can earn academic credit for the following Coast Guard certifications and endorsements:

- 100 ton or above Master Captain’s License
- 200 ton or above Master Captain’s License
- Able Seaman certification
- Apprentice Mate (or higher towing license)
- Medical care provider certificate
- Radar Observer Unlimited certificate
- Rating Forming Part of a Navigation Watch certification
- Tankerman certification
- Vessel Security Officer certification
- Lifeboatman endorsement
- Standards of Training, Certification, and Watchkeeping endorsement

Preapprenticeship Pathways in the TDL Sector

At the other end of the hiring spectrum from recruiting service members and veterans into apprenticeship programs, employers are increasingly engaging secondary school systems to raise industry career awareness among middle school and high school students. Port Houston has created a replicable model for industry-aligned career pathway and preapprenticeship program development with local high schools. With local employers, community colleges, and workforce intermediaries, the

port created the Port of Houston Partners in Maritime Education (PHPME) program to help meet the area's long-term projected workforce needs. The program established six local high school-based maritime education programs that provide students the opportunity to gain industry-aligned foundational knowledge and skills, such as these:

- basic nautical terms
- basic firefighting skills
- basic first aid
- ship terminology
- basic survival skills
- navigation
- engineering
- distress communications

Program graduates earn their TWIC (Transportation Worker Identification Credential) card, which is required for access to any American port, as well as their Coast Guard Merchant Mariner Credential, which is required for entry-level work in the maritime industry. Program graduates who enter the workforce directly from high school have an advantage, given their solid foundational knowledge about the industry. Graduates who pursue a college degree can apply relevant dual or concurrent college credit earned during their high school career to postsecondary education programs at participating two- and four-year colleges and universities: Houston Community College, San Jacinto College, the Texas A&M Maritime Academy at Galveston, and Texas Southern University.

Port Houston, which launched an apprenticeship program for electricians and diesel mechanics in 2017 with assistance from TransPORTs, has linked PHPME high school maritime academies to its apprenticeship program through preapprenticeship. In 2012, DOL created a framework for high-quality preapprenticeship programs, which are distinguished by six elements, including facilitated entry or articulation.⁷ By providing an industry-aligned preapprenticeship pathway, Port Houston can award program completers credit for previous learning toward their required RTI. The PHPME maritime academy program, which was selected as a 2018 National Career Pathway Network Excellence Award honorable mention winner, offers TDL employers and educators a model for partnership and apprenticeship program formation that aligns academic and career pathways.

Conclusion

Facing sustained demand for its services, a shrinking incumbent talent pool, and fierce competition for a more skilled, educated workforce, today's TDL employers are examining apprenticeship as a proven model to meet current and emerging workforce needs. Apprenticeship provides employers the

structure needed to create consistent training across multiple sites and related occupations, as well as the flexibility to quickly embed relevant technical training and on-the-job learning experiences within existing occupations as they adopt emerging technologies. Apprenticeship also provides employers natural opportunities to partner with secondary and postsecondary educators to create industry-aligned curricula, programs, and academic pathways that provide apprentices college credit and high-quality technical instruction, ensuring they bring critical knowledge and thinking skills to the workplace. As they compete for fewer workers in a near-full-employment economy, employers will also need to more regularly and rapidly upskill or cross-skill workers, which apprenticeship models can facilitate. Lastly, as baby boomers upend the current TDL employment landscape through a massive retirement exodus, forward-thinking employers will use the mentoring structure apprenticeship provides to capture and transfer retiring workers' institutional, industry, and technical knowledge to new or young workers.

TDL employers eager to stay ahead of converging employment-affecting forces are already implementing apprenticeship as a customizable, structured tool to recruit, hire, and train the technically skilled, educated, and credentialed workforce needed to maintain their competitive advantage. By providing an “earn and learn” model that results in relevant work experience, occupational skills mastery, and industry-valued credentials, TDL companies can differentiate themselves as an employer of choice, which will be increasingly important in a rapidly growing and changing sector.

Notes

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Katie Adams, a national apprenticeship subject-matter expert and chief executive officer of Apprenticeship Services Group, has helped US companies and community colleges develop, market, and sustain successful apprenticeship programs. She has led strategic marketing and project management for multimillion-dollar workforce development programs funded by the US Department of Labor and the National Science Foundation Subdivision of Advanced Technological Education. She is a published author and national speaker on workforce development and strategic communications.

3. Education

Frederick Hess and RJ Martin raise an excellent question about whether career and technical education (CTE) is here to stay. With the massive number of CTE-related laws, executive actions, and budget provisions enacted in 2017 and the upswing in student interest in an education with practical application, one would hope CTE is more than a shifting sentiment and is instead making significant inroads into preparing young adults for the world of work. In “Is Career and Technical Education Just Enjoying Its 15 Minutes of Fame?” the authors study CTE relative to other 21st-century education reforms and develop takeaways using an interesting twist to their analysis. Who knew Queen Elizabeth and Steph Curry could bring relevance to their argument?

These days, local and regional technical institutions and community colleges are spearheading much of the action associated with registered apprenticeship. Community colleges, in particular, are increasing their presence as a local or regional anchor with an eye on workforce development. Many community college systems are cautiously exploring this new role alongside apprenticeship. Others are collaborating with employer partners, industry associations and boards, and government to launch apprenticeship initiatives. Whatever the degree of enthusiasm, institutions have many factors to consider before moving forward. In “Assessing Whether Colleges Can Offer Modern Apprenticeship Programs,” Rebecca Lake provides college leaders a “systematic assessment plan” to determine whether apprenticeship is right for them. Lake aims to help community colleges and technical institutions stack the deck for success with her reflections from years in the field.

Melissa Vermillion, Ervin Dimeny, and Deborah Williamson discuss their experience collaborating with high schools, community colleges, workforce boards, employers, and government to build a pipeline of skilled workers for high-priority industry sectors in Kentucky’s Appalachian region. In “Kentucky’s Advanced Technology College High: Expanding Apprenticeship through Realignment of Business and Education Resources and Using Intermediaries to Achieve Scale,” the authors reflect on the Kentucky Technology initiative. Using industry intermediaries to administer and troubleshoot for this broad collaborative, high school CTE students transition from preapprenticeship training into registered apprenticeships with lucrative job opportunities very much in the mix, all while earning while learning and receiving their high school diploma and associate’s degree with a nationally recognized industry credential. From assessing Kentucky Technology’s challenges and overcoming obstacles to expanding apprenticeships statewide, the authors examine the comprehensive school-to-work career pathway and talent development Kentucky Technology model.

Is Career and Technical Education Just Enjoying Its 15 Minutes of Fame?

Frederick Hess and RJ Martin

Foreword by Lisa Yates

Career and technical education (CTE) is everywhere. Many high schools, community colleges, and four-year institutions are doing it. Even some middle schools are getting into the game, making eighth-grade students declare a concentration before heading into a high school with CTE opportunities.

CTE is not just a fleeting moment in education reform but indicative of a trend toward shaking up traditional norms and ways of thinking about education—aligning education with workforce needs and career development. Further fueling this progression is apprenticeship. Modern apprenticeship amplifies the fundamental components of CTE, work-based and classroom training, and then some.

TABLE 1

Comparing Modern Apprenticeship and Career and Technical Education

Program component	Modern apprenticeship	Career and technical education
Hands-on experience	Yes	Sometimes
Structured on-the-job training	Yes	Sometimes
Earning while learning	Yes	No
Work-based and classroom learning	Yes	Yes
Full-time employment upon completion	Yes	No
Strong professional mentoring or coaching	Yes	No
Improved employability and interpersonal skills, or “soft skills”	Yes	Yes
Associate’s degree	Sometimes	Sometimes
Nationally recognized industry credential upon completion	Yes	No
Student debt upon completion	No	Yes

Over the past couple years, career and technical education has garnered a lot of attention. *Politico* reported that 49 states and Washington, DC, enacted 241 career and technical education–related laws, executive actions, and budget provisions in 2017.¹ The National Governors Association has tagged career and technical education as one of its 12 priorities, and Jobs for the Future has observed that career and technical education “has become the ‘next best thing’ in high school reform.”² A 2018 American Enterprise Institute study found that career and technical education was the only education issue a majority of gubernatorial candidates supported.³ Meanwhile, a 2018 analysis reported that the number of high school students concentrating in career education rose 22 percent, to 3.6 million, during the past decade.⁴

All this raises a big question, given education’s long experience with fads and shifting sentiment: Is the boom in career and technical education one more fad, or does it reflect something more substantial? That answer matters for how much attention this push deserves from educators, parents, and policymakers.

In a stab at addressing this question, we examined the media attention devoted to career and technical education over the past two decades—and how that compares with the attention devoted to other popular 21st-century education reforms.

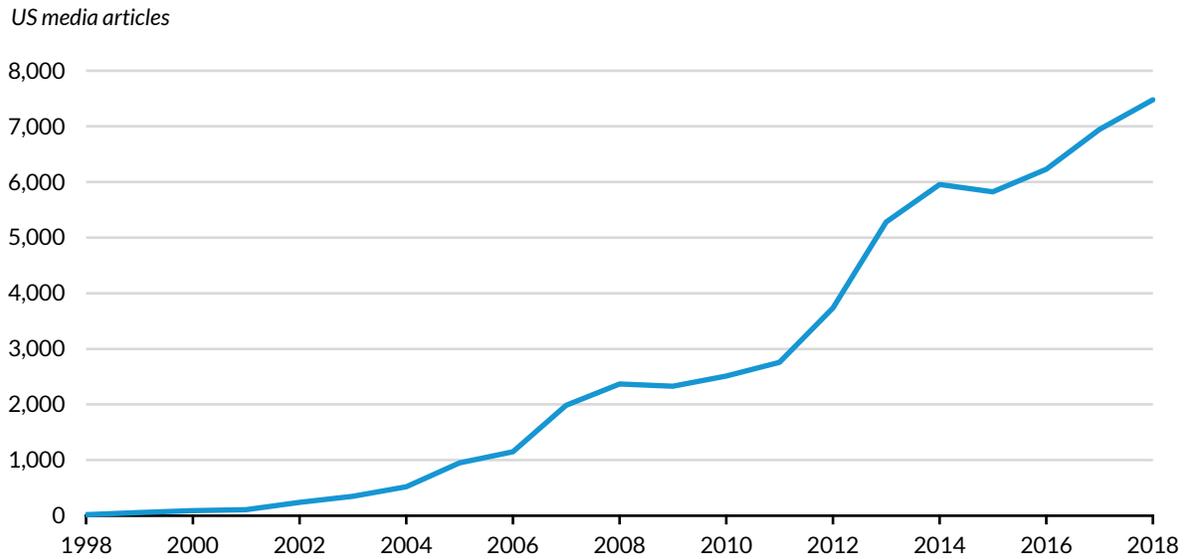
We used the search engine LexisNexis (a database of news articles from national and international media outlets) to identify the number of articles each year that mentioned career and technical education and, for comparative purposes, other related terms. We searched for “career and technical education” rather than “CTE” to exclude articles about chronic traumatic encephalopathy, a degenerative brain disease that has received extensive coverage for its impact on former football players’ health.

In all cases, we searched for articles in the LexisNexis category “US Publications,” a compilation of major US media sources. While that LexisNexis category is comprehensive, it is not exhaustive. For example, blogs and some education-specific media, such as *Education Week*, are not included. The exclusion of specialized outlets helps ensure that the results are a pretty good gauge of how much attention the relevant issues received across the broad sweep of US media.

Since 1998, the number of articles mentioning career and technical education has increased more than a hundredfold (figure 1). Since 2004, media mentions have grown over tenfold, and they have doubled since 2012. In short, the coverage devoted to career and technical education has exploded during the past two decades.

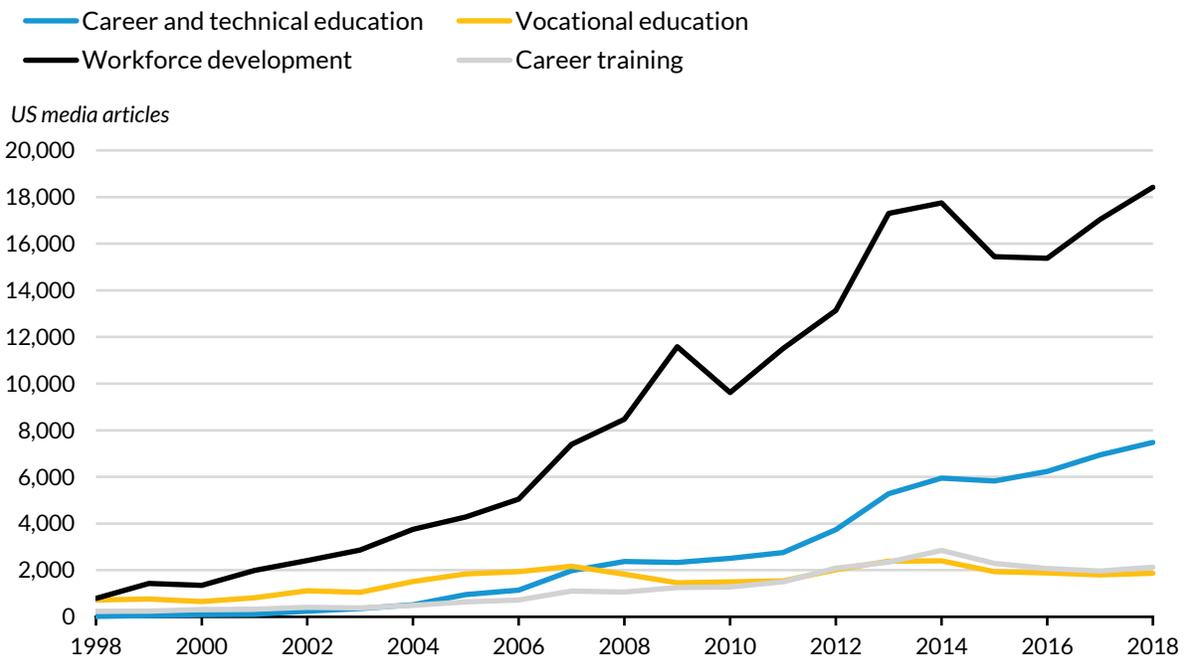
This heightened interest in career and technical education is part of a larger trend, which entails increased attention to skills training and workforce preparedness (figure 2). Indeed, media mentions of workforce development increased by a factor of 13 in the past two decades.

FIGURE 1
Press Mentions of Career and Technical Education



Source: Authors' calculations from LexisNexis.

FIGURE 2
Press Mentions of Terms Used to Discuss Work-Related Education



Source: Authors' calculations from LexisNexis.

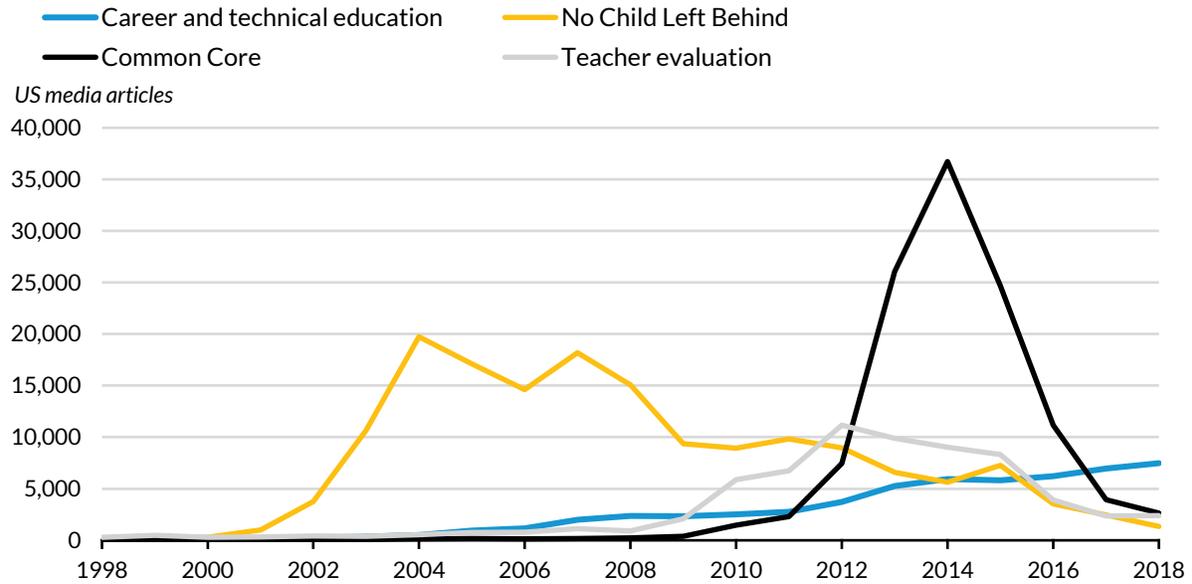
Meanwhile, other training-related terms that were once more common than career and technical education have not kept pace. In 1998, career training was more ubiquitous than career and technical education was, but it was surpassed by career and technical education in 2004 and is now mentioned not even one-third as often. Vocational education was once mentioned 10 times more often than career and technical education was, but starting about a decade ago, it plateaued and was surpassed by career and technical education. It seems safe to say that mentions of career and technical education have come at the expense of vocational education and career training; less clear is whether that shift has any substantive import or is mostly a question of branding.

To put coverage of career and technical education in context, figure 3 shows the attention devoted to three of the 21st century's most notable education reforms: No Child Left Behind, Common Core, and the Obama-era push to overhaul teacher evaluation. At their peaks, No Child Left Behind and Common Core received three to five times as much media attention as career and technical education garnered last year. At its height in 2012, teacher evaluation received 50 percent more attention than career and technical education received last year. Yet, while it has not come anywhere close to those peaks, career and technical education has shown a markedly different public profile than these other reforms—all of which exploded to public consciousness over a span of three or four years and then declined. Career and technical education, on the other hand, has seen a long, dramatic, and uninterrupted build over an extended period of time. Given this long pattern and an attendant lack of controversy, career and technical education seems unlikely to experience the rapid declines in public interest endured by these more polarizing reforms.

Career and technical education even outpaces the attention devoted to other familiar education improvement strategies (figure 4). For instance, one of the more high-profile education reforms of the past two decades has been school vouchers. From 1998 to 2008, media mentions of school vouchers significantly exceeded those of career and technical education. Over the past decade, however, career and technical education caught up to and then surpassed attention devoted to vouchers. This is noteworthy given that vouchers have long been the kind of controversial issue that attracts press attention, while career and technical education has tended not to evoke such strong emotions. Meanwhile, whereas attention to career and technical education was once indistinguishable from that shown for other long-standing enthusiasms, such as school turnarounds, personalized learning, and 21st-century skills, career and technical education has steadily distinguished itself over the past 10 to 15 years.

FIGURE 3

Press Mentions of Major 21st-Century Education Reforms

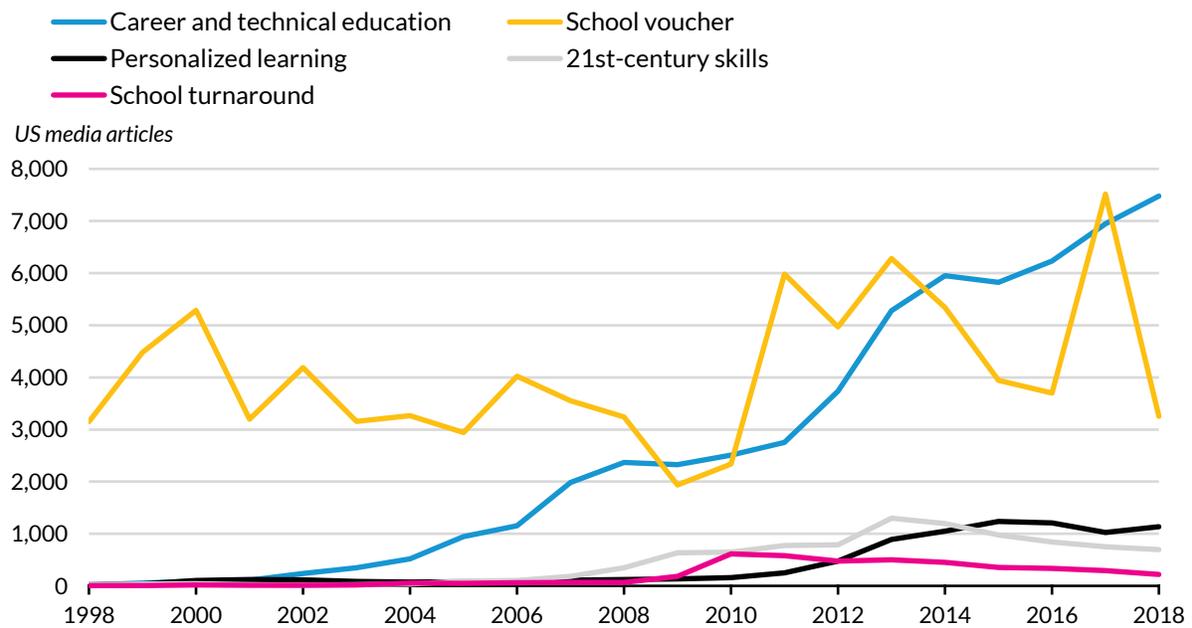


Source: Authors' calculations from LexisNexis.

Note: No Child Left Behind registers before 2001 because LexisNexis includes then-candidate George W. Bush's pledge that "no child is left behind."

FIGURE 4

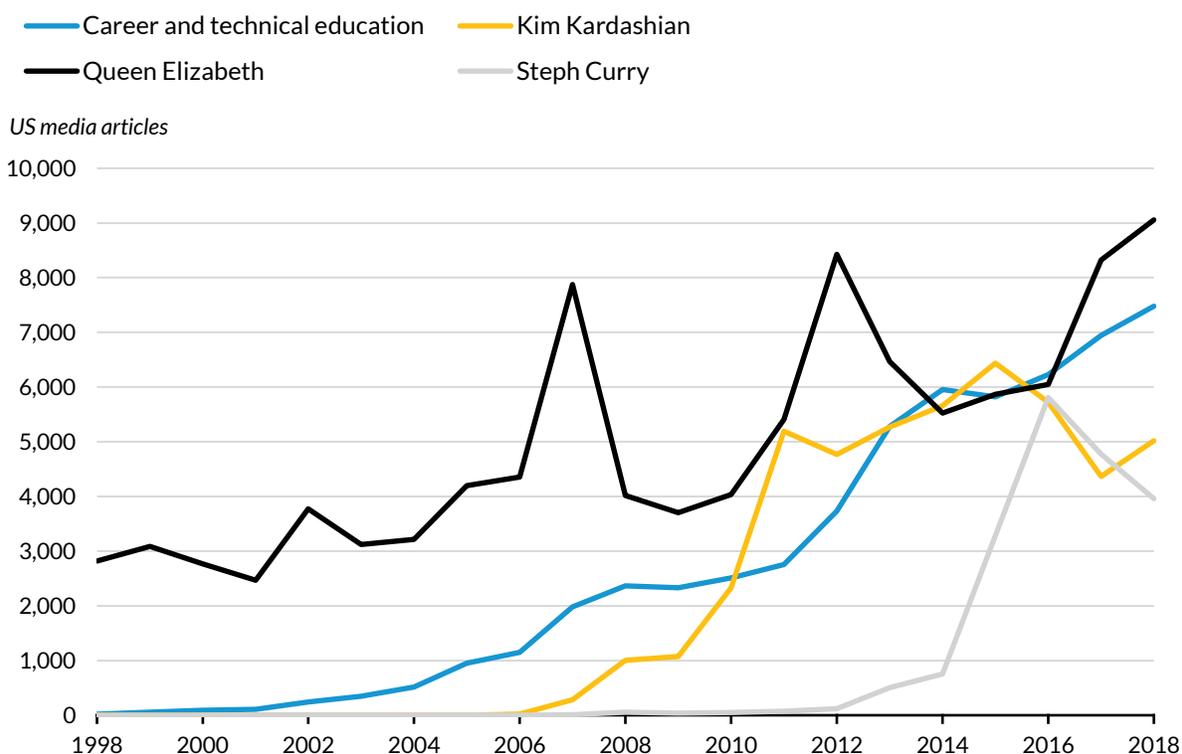
Press Mentions of Familiar Education Improvement Strategies



Source: Authors' calculations from LexisNexis.

Mostly out of curiosity, and partly to get a little perspective on how much attention these tallies actually represent, figure 5 compares the mainstream US media mentions of career and technical education with those of some recognizable pop culture figures. Over the past five years, for instance, career and technical education has held its own against Great Britain’s Queen Elizabeth while generally outdistancing celebrity Kim Kardashian and two-time NBA Most Valuable Player (MVP) Steph Curry. Indeed, career and technical education’s press mentions outpaced Kardashian’s in four of the past five years and Curry’s in all five—including both of his MVP campaigns.

FIGURE 5
Select Mentions of Select Celebrities



Source: Authors’ calculations from LexisNexis.

Takeaways

Given the ebbs and flows of education reform, it is useful to closely observe the evolution and public fate of various education enthusiasms—both to help see where things are going and to make sense of how we got here. In the case of career and technical education, such scrutiny suggests a few things.

First, and most obviously, career and technical education’s prominence has increased steadily and significantly over two decades. What is not so clear is whether this reflects the emergence of something

new or the (seemingly successful) rebranding of the familiar idea of vocational education. Notably, mentions of vocational education have not budged during the past decade, while interest in career and technical education has taken off.

Second, this increased interest in career and technical education is part of a broader growth in the prominence of training and workforce development. Regardless of the reason for this growth—whether economic anxiety or disenchantment with college for all or a simple evolution in public taste—career and technical education advocates are making their case at a propitious time for career-centric education.

Third, career and technical education's rise has been unusually consistent and long-running when compared with other 21st-century education reforms and is especially notable for an idea that generates little controversy. After all, the reforms that have garnered much more notice than career and technical education, in general, rapidly retreated after being catapulted to prominence. Meanwhile, even seemingly popular reforms (such as school turnarounds, personalized learning, and 21st-century skills) have failed to gain nearly as much fanfare as career and technical education.

It seems a good bet that career and technical education's gradual build will give it more staying power than other contested, high-profile 21st-century reforms. For better or worse, career and technical education appears poised to be a focal point in the post-No Child Left Behind, post-Common Core world.

Notes

- ¹ Kimberly Hefling, "States Embrace New Career and Technical Education Policies," *Politico*, January 26, 2018, <https://www.politico.com/newsletters/morning-education/2018/01/26/states-embrace-new-career-and-technical-education-policies-084330>.
- ² "Policy Positions," National Governors Association, accessed August 19, 2019, <https://www.nga.org/policy-positions/>; and Nancy Hoffman, "10 Equity Questions to Ask about Career and Technical Education," *Jobs for the Future*, February 13, 2018, <https://www.jff.org/points-of-view/10-equity-questions-ask-about-career-and-technical-education/>.
- ³ Frederick M. Hess and Sofia Gallo, "What Do Would-Be Governors Have to Say About Education," American Enterprise Institute, February 21, 2018, <https://www.aei.org/publication/what-would-be-governors-say-about-education/>.
- ⁴ Michelle Hackman, "Vocational Training Is Back as Firms Pair with High Schools to Groom Workers," *Wall Street Journal*, August 13, 2018, <https://www.wsj.com/articles/vocational-training-is-back-as-firms-pair-with-high-schools-to-groom-workers-1534161601>.

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Assessing Whether Colleges Can Offer Modern Apprenticeship Programs

Rebecca Lake

Community and technical colleges, states, and large and small companies are bombarded with information about the workforce advantages of apprenticeships. Apprenticeship is an underused training and educational tool in America. A few community colleges have been involved with apprenticeships by providing credit or noncredit courses for the employers and unions with registered apprenticeship (RA) programs. But most community colleges never think of apprenticeship as a viable option to serve their mission. Apprenticeship has been a workforce development strategy emphasized by both the Obama and Trump administrations. With all this focus on apprenticeship, the question for community or technical college leaders is whether it is logical or feasible to be involved.

In the apprenticeship space, community colleges can provide credit or noncredit related training instruction for employers that have their own RA programs, or colleges can hold the RA program sponsorship themselves. Either way, colleges must understand the wide-ranging benefits of offering apprenticeship programs for all parties involved. These benefits collectively can be described as the win-win-win apprenticeship scenario. For employers hiring apprentices, the benefits, or wins, include the ability to fill hard-to-fill positions and close the company skills gap; develop their own knowledgeable employees with mentor-led on-the-job training programs; reduce turnover and recruiting costs; ensure seasoned experts pass on knowledge before they retire; and put entry-level employees on a career path that is an asset for the company as it grows. For the potential apprentice (student), the wins include guaranteed employment; a sustaining salary while attending college courses; graduation with no debt; graduation with an associate's degree in applied science or a certificate and with 2 or 3 years of company experience; and a national RA credential from the Department of Labor Office of Apprenticeship. For the college offering apprenticeship programs, the wins include receiving assistance to fulfill the college mission, meeting the needs of employers and job seekers, improving college enrollment and completion rates, improving fiscal strength with an additional revenue stream, and building critical relationships with employers.

The Assessment Framework: Four Questions

According to the American Association of Community Colleges, there are 1,051 public, tribal, and independent two-year accredited colleges.¹ Most of these have no involvement with RA programs, but some now speculate whether offering these programs is feasible or viable. Investigating this new type of initiative requires a logical systematic assessment plan. To focus this assessment plan, college leaders

need to answer four questions: Is there institutional buy-in? Is there internal readiness? Do companies know about RA programs, and will they fully participate with the college? Do enough people live in the area or attend college to create an adequate potential apprentice pool?

Overall institutional buy-in. College leaders must assess the institutional acceptance of undertaking this new initiative. The college can provide credit or noncredit related training instruction for a company that has its own RA program. Or the college can become an RA program sponsor. Whatever the college decides, questions still remain: Should the college invest time, effort, funds, internal and external political capital, and internal resources? Does the college have part- and full-time faculty, top administrators, and staff members willing to develop, implement, and manage RA programs? Is the college in it for long haul? Is there a leader (at the dean level or higher) invested or willing to become invested in the project?

Calculating internal readiness. Assessing the institutional capacity and readiness to undertake RA programs or become an RA sponsor is the second part of the investigative plan. Leaders must candidly answer the following questions: What are the internal structures conducive to this undertaking (e.g., academics, student services, support services, finance)? Are college departments willing to streamline or modify processes, systems, or services to help students and companies? Are faculty willing to listen to requests and work with companies to tweak curricula and to meet federal RA standards? Is there a dedicated management structure, or can one be established, that is responsible for all RA activities and that will be allowed to function (to coordinate outreach, marketing, student and employer coaching, and robust continuous quality improvement)?

Company awareness and commitment. Also important for a company's commitment to hiring apprentices for RA programs is a realistic assessment of the college's surrounding community. This is a requirement because RA programs can happen only with companies' direct involvement. Often, companies offer only tenuous assurance that they will become part of this initiative. Questions to assess companies' involvement include the following: Has the college educated companies about apprenticeships so they can make an informed decision to participate in an RA program? What types of RA programs can help companies fill their skill gaps or meet their hiring needs? Does the college offer the credit or noncredit programs of study (degrees and certificates) companies want? Has the college assessed companies to ascertain their commitment to participate in an RA program?

Adequate potential apprentice pool. The last part of this assessment plan centers on determining whether an adequate pool of potential apprentices exists. Companies need to find incumbent workers or new hires interested in becoming apprentices, and colleges must market the opportunity to increase awareness. Questions to answer to assess the potential apprentice interest include the following: Does the college have good relationships with high school counselors so information about apprenticeships is passed on to graduates? Do area high schools have career and technical education opportunities that can feed into the RA programs? Are local associations, nonprofit groups, veterans' groups, and

Workforce Innovation and Opportunity Act centers prepared to establish a pipeline for those they serve? Will the college admissions and marketing departments support and market the RA initiative?

Summing It Up

Undertaking any new college initiative is fraught with problems, issues, and concerns. What steps can a community college take to stack the deck for success if it decides to undertake the apprenticeship initiative? With this assessment plan, a college can discover the five basic components it must have to offer RA programs. If they are present and decisively dealt with, a college will be successful offering this new apprenticeship initiative if: (1) the faculty is fully engaged, (2) leaders and staff members in admissions and marketing are on board, (3) there is a college-wide champion who is invested, (4) companies are committed to hiring apprentices, and (5) the college president is behind the apprenticeship initiative with more than just lip service.

Although offering registered apprenticeship programs is new for most community and technical colleges, it is doable and can be successful. Success starts with a logical systematic assessment plan of the college answering four main questions described in detail above. But companies newly involved in apprenticeship are cautious. Colleges starting an apprenticeship initiative need to understand it takes about three years to build sustainable growth in the number of employers involved and apprentices enrolled. The growth rate of the registered apprentice initiative is reciprocal to the degree of effort and resources the college invests, but it can be a wise investment.

Note

¹ Data from the American Association of Community Colleges membership database, January 2019. Represents regionally accredited primarily associate's degree-granting colleges.

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New Mexico's Information Technology Apprenticeship Program Takes Flight

Ivy Love

Shauna Henington had been a dental assistant in Albuquerque for 13 years and was ready for a change. With three teenagers at home, she wanted to find a way to earn more for her family. But it would take many expensive years of further study to move into a role in dentistry that would get her the income she wanted. Instead, Shauna began pursuing an associate's degree at Central New Mexico Community College (CNM) to prepare her to join an industry projected to grow more than 20 percent in New Mexico between 2010 and 2020: information technology (IT).

Shauna wanted to find an IT job while she was in school, but even though she was learning quickly in the classroom, she couldn't land a job without any experience. Although degrees are paramount for hiring decisions in some fields, IT is different. Many employers prioritize work experience over all else, but others want industry certifications or a degree or some combination of the three. This lack of standardization means the path into a good job in the IT sector can be unclear.

One of Shauna's professors had been encountering the same problem for years. Dave Beach had been teaching in the computer science department at CNM for more than a decade, and after all those years of teaching and mentoring talented students, it bothered him that the transition from gaining knowledge in the classroom to landing a place in the IT workforce wasn't always clear or simple. While pondering these questions with colleagues, Dave heard about the American Apprenticeship Initiative (AAI), a federal funding program launched in 2015 to develop registered apprenticeships that integrate paid training with a local employer and classroom learning and that are designed to lead to a full-time job. Dave and his colleagues put together an application proposing to create a slate of IT apprenticeships, hoping that AAI resources would support his students at CNM and others in the Albuquerque community who had much to offer local IT employers.

Their application was successful. In 2016, the college received a \$2.9 million AAI grant from the US Department of Labor to create the New Mexico Information Technology Apprenticeship Program (NMITAP), the state's first registered apprenticeship program in IT. NMITAP comprises a slate of apprenticeships in various IT occupations that aims to place 300 local residents in apprenticeships by the end of 2020. With only around 2,300 registered apprentices in any occupation in the state,¹ 300 from NMITAP over just a few years would boost the state's apprenticeship population. Apprenticeships available through NMITAP include roles as a network support technician, computer support specialist, applications developer, medical coder, and cybersecurity support technician, spanning needs of tech employers from hospital systems to the city government. Apprentices in each yearlong program earn wages while they train with experienced mentors at local employers and take specific classes at CNM

that dovetail with their day-to-day work. Courses required for each apprenticeship also prepare apprentices to earn certifications that demonstrate their ability to handle specific tasks within their chosen occupation. From initial placement to the end of the apprenticeship, everything participants need to enter and succeed in the IT labor force is integrated into NMITAP.

When Dave heard that Shauna was struggling to land an IT job even after outstanding work during her associate's degree program, he told her about the soon-to-launch NMITAP and encouraged her to apply. If she got an apprenticeship placement, she would be paid to learn on the job, complementing the skill set she'd developed in the classroom at CNM. The apprenticeship would offer the opportunity to work her way into Albuquerque's growing tech sector and move toward higher earnings to better support her family.

Shauna's not alone in her quest to pursue education and training after building a career and having a family. Job changes—even across occupational sectors—are common now. It's important that job training opportunities like apprenticeship be open and accessible for young students right out of high school or a traditional bachelor's degree program, but they must also support community members like Shauna who have significant work experience and are transitioning to a new career.

After following Dave's advice and applying for NMITAP, Shauna got a call from the program office, who told her she'd been offered an apprenticeship placement at Ardham Technologies, an IT consulting company that offers services to clients with various needs. Ardham brought Shauna on in 2017 as a computer support specialist apprentice, and she flourished in the role. "I was very thankful I was given this opportunity so that I could learn on the job," Shauna said. "I needed something where I could learn and still focus on the job, but I could still also focus on my family." Her mentor, network engineer Chris Mains, says Shauna proved herself to be a valuable member of the team right away, asking incisive questions and developing her skills with every new assignment. "I almost feel at times like I'm her intern," Chris said, "because she's given me that extra insight.... She's always forthright, fact-finding, diligent."

From Shauna's perspective, an apprenticeship and all the opportunity it brings made perfect sense. But it also made perfect sense for Ardham to bring on an experienced professional as an apprentice, even if her work experience was in a different field. In Shauna's case, the technical skills she gained through her first career as a dental assistant may not have been particularly useful in her IT apprenticeship, but she'd developed strong customer service and communication skills that set patients at ease in a dental office, no easy task. Her extensive experience interacting with clients in her previous career was immediately useful to Ardham as they offered technical support to clients with various needs, some complex and urgent. Shauna was immediately able to contribute to the team, even as she continued to build her technical skills tailored to the IT sector under Chris's mentorship.

Certainly, apprenticeship offers employers a way to tailor an apprentice's training to the exact skills they need, but that does not mean they should limit recruiting to people embarking on their first job

after high school or college. Bringing on an apprentice making a career change, like Shauna, offers a way to bring a fresh perspective to the workplace and to benefit from the skills that apprentices have gained in other sectors. An experienced apprentice—even with experience different from what might be in a job description for an open position in an IT firm—can be a boon for a new employer.

Although youth apprenticeship options are growing, a trend to celebrate, the average age of an apprentice in the US is still 29 (Amoyaw and Brown 2018). People who enter registered apprenticeships in the US likely already have significant work experience or some level of postsecondary study. Rather than requiring career changers to add postsecondary study on top of a full-time job—or to quit a job to return to college—apprentices are paid to train for a specific occupation while taking classes that prepare them for the job. The ability to continue earning while pursuing new training could encourage adults who wish to upskill or change careers but may feel stuck between being unable to quit a current job and being unable to make time for additional study on top of their current work.

NMITAP is making a point to recruit diverse applicants and bring people of various backgrounds and education levels into the IT field in Albuquerque. Though centered at the community college, program leaders have built partnerships with a variety of local organizations—including the Hispano Chamber of Commerce, the American Indian Chamber of Commerce, and Catholic Charities of New Mexico—to expand recruitment of apprentices and employer participants. With strong community relationships to expand the program’s reach, NMITAP is reaching traditional and nontraditional applicants, knowing that each individual brings something unique to their prospective employers.

NMITAP has attracted diverse applicants, ranging from people who have earned a GED, to those people like Shauna with an associate’s degree, to a few who have a graduate degree in another field. About one in three applicants in the first cohort had no college experience. In a male-dominated sector, around half the applicants in NMITAP’s first year were women. Through extensive community outreach for recruiting, openness to residents of all ages and professional backgrounds, and paid on-the-job training, NMITAP could level the playing field in the IT sector, especially for those who are now underrepresented.

The relationships and resources necessary to provide these professional opportunities in New Mexico were already in place at the community college and with local employers. By drawing from the strengths of community nonprofits, state and federal financial resources, local academic infrastructure, and businesses, NMITAP created programs that bring the best of Albuquerque to residents eager to enter the IT sector. It’s a matter of connecting local talent, including many career changers, and employers committed to cultivating local talent. The sheer number of applicants in NMITAP’s first year (216) versus placements (27) shows that interest is strong and that applicants from across the community were eager to jump into the Albuquerque tech sector at the first opportunity.

A member of the first cohort, Shauna’s experience with NMITAP was a success. She landed an IT job at New Mexico Highlands University–Rio Rancho after completing her apprenticeship. Having an

apprentice in the office made a difference for Ardham, and the company does to take on additional apprentices in the future. Shauna’s mentor, Chris, feels that apprenticeship offers dividends from a talent development perspective and makes good business sense. “Your product is the Shaunas of the world. At some point, she’s going to be billed out for \$200 to \$300 an hour, so invest in her.” The group of Albuquerque employers like Ardham that brought on apprentices is not only benefiting from additional hands in the office to support current needs. It’s bigger than that. NMITAP and its community and employer partners are collectively preparing a pool of skilled talent—developed in house, at CNM, or in a previous career—to meet IT skill needs in their local community for years to come.

Note

- ¹ “Registered Apprenticeship National Results Fiscal Year (FY) 2019 (10/01/2017 to 9/30/2018), US Department of Labor, Employment and Training Administration, last updated March 6, 2019, https://www.doleta.gov/oa/data_statistics.cfm.

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Kentucky’s Advanced Technology College High: Expanding Apprenticeship through Realignment of Business and Education Resources and Using Intermediaries to Achieve Scale

Melissa Vermillion, Ervin Dimeny, and Deborah Williamson

“But innovation only happens when people are able to work in the gray space—where ambiguity is okay and business principles, rather than hard and fast rules, apply.”

—Edith Onderick-Harvey, “5 Ways to Help Your Team Be Open to Change,” *Harvard Business Review*, April 3, 2019, <https://hbr.org/2019/04/5-ways-to-help-your-team-be-open-to-change>.

Kentucky is positioning itself to become the center of engineering and manufacturing excellence in America. As Kentucky pursues this goal, it must address the need for skilled workers. One approach is to educate high school students in high-priority sectors—such as business and information technology, health care, logistics, and manufacturing—through apprenticeship. It is especially important that high school students earn industry credentials and gain work experience to meet employers’ expectations and to chart meaningful and gainful career pathways for themselves.

Kentucky is doing this, in part, through the formal collaborative Kentucky Technology, with funding from one of six national project awards received from the US Department of Education’s Pathways to STEM Apprenticeship for CTE Students.¹ Kentucky Technology is an educational model that enables business, K–12 and postsecondary education, and community entities to realign resources and collaborate to provide students industry sector–supported pathways to qualifications or credentials in science, technology, engineering and mathematics (STEM) and local employment opportunities as apprentices. The latter is a unique feature of Kentucky Technology. Unlike co-ops and internships, apprenticeships follow an earn-and-learn model, whereby businesses typically pay apprentices wages and training instruction necessary to perform the job functions. Depending on the occupation, an apprentice completes a program in one to four years, with a nationally recognized credential and little or no student debt.

Key elements of the Kentucky Technology model include the following:

Innovative curriculum. Designing and sequencing coursework to achieve the best possible outcomes for students is a key aspect of configuring Kentucky Technology. Engaging business partners in designing the curriculum is essential for delivering a high-quality, relevant apprenticeship experience. Moreover, because the Kentucky Technology model incorporates the US Department of Labor’s registered apprenticeship standards for occupations, apprentices develop a deep understanding of and familiarity with fundamental content that employers understand and embrace as highly applicable to their industry.

Innovative, applied approaches to learning. Partnerships between schools and industry sectors enable innovative approaches to the delivery of learning, approaches that would not be possible if schools or industry sectors acted in isolation. Working together, schools and industry sectors provide opportunities for students to engage with the world of work and better understand the relevance of their learning to gainful careers and pathways after school. Interactive, applied teaching strategies are essential to apprenticeship success. It is imperative that educators providing the required training instruction for apprentices are afforded opportunities to learn and practice new subject-matter content and teaching modalities, including the use of relevant and contemporary technologies.

Industry mentoring and support. The mentoring relationship between young people and industry personnel provides continual support for students to achieve a qualification. It is a stand-out component of Kentucky Technology. Mentors ensure student learning stays on track; help students make informed decisions about their education, training, and employment options; and help students navigate the workplace.

Advanced academic and industry qualifications. Kentucky Technology graduates can earn a high school diploma, postsecondary degree (optional), and a nationally recognized industry credential. The seamless pathway between high school, community college, and sponsor or employer reduces challenges typical of this transition. Obtaining an associate’s degree is more enticing and accessible because it is part of the Kentucky Technology package.

Links to employment. Close collaboration between education and Kentucky Technology’s employer partners (or apprenticeship sponsors) helps graduates become well versed in the industry’s latest technologies and ensures employer partners are improving their talent pipelines with capable workers. Additionally, with significant on-the-job training alongside classroom learning, students make substantial connections to employers and employment opportunities upon program completion.

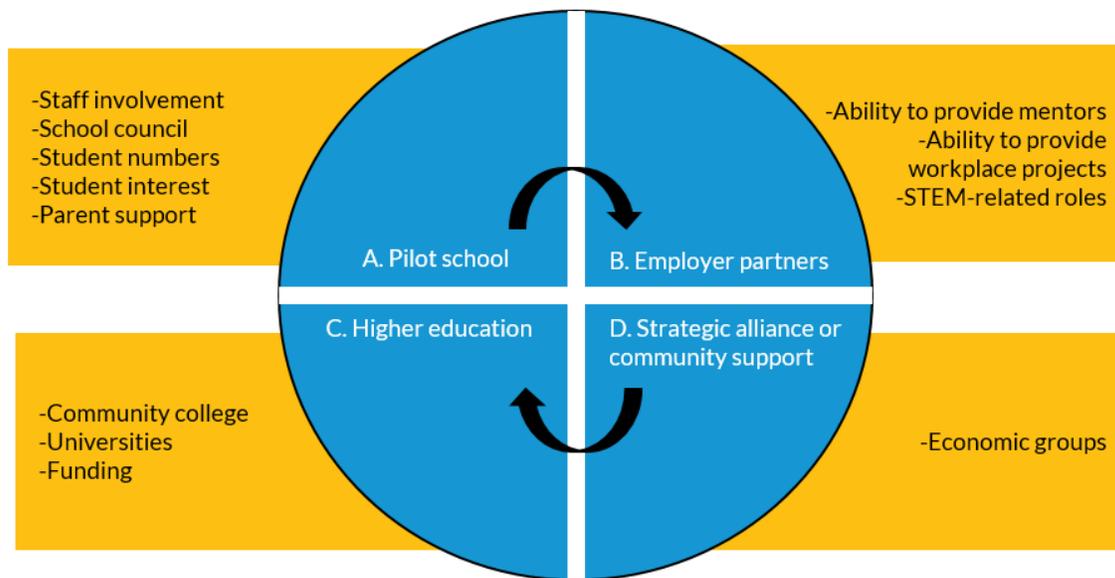
Registered apprenticeship. Businesses are encouraged to register their apprenticeship programs to ensure components and competencies meet national standards for quality and rigor and apprentices’ skills are well honed and marketable. More and more employers use competency-based frameworks to structure their programs. Unlike time-based apprenticeships, competency-based apprenticeships give

apprentices the opportunity to demonstrate mastery of skills rather than merely complete a requisite number of hours. Examples of competency-based apprenticeships available to students include surgical technologist (operating room specialist), software developer, medical assistant, medical record and health technologist, health management coder, emergency medical technician, certified nurse assistant, and computer programmer.

Employers turn to Kentucky’s apprenticeship program coordinators (within the state’s Education and Workforce Development Cabinet) for guidance and technical support. Coordinators also provide information on potential financial incentives and funding opportunities. Perhaps most importantly, they simplify registration, helping apprenticeship employers with all aspects of the program. In Kentucky, the coordinating team members stay with a business for the life of their apprenticeship program, provide new and relevant information regarding apprenticeship from contemporary policy and research, and are a sounding board for businesses desiring to expand their programs and occupations. Many states have similar coordinator-type positions.

Together with business leaders, workforce boards, postsecondary institutions, school districts, and government, Kentucky is addressing its need for skilled workers through innovative visioning and resource realignment.

FIGURE 1
Depiction of the Kentucky STEM Apprenticeship Project



Source: Courtesy of the Institute for Workplace Skills and Innovation America.

Note: STEM = science, technology, engineering, and mathematics.

The Inaugural Kentucky Technology Pilot in Perry County, Kentucky

The Kentucky Technology pilot has launched, commencing in Hazard, the county seat of Perry County, Kentucky, with two schools designated as rural local education agencies and the local community college, which serves seven Appalachian counties in southeastern Kentucky. Students grades 11 and higher will begin their apprenticeships in fall 2019. Partners in Perry County Kentucky Technology include the Appalachian Regional Healthcare System, the University of Kentucky Center for Excellence in Rural Health, Primary Care Centers of Eastern Kentucky, Juniper Health, Perry County Schools, Hazard Independent Schools, and Hazard Community and Technical College.²

Kentucky Technology builds upon the Kentucky registered apprenticeship program, a recipient of both the US Department of Labor's 2016 Accelerator grant and ApprenticeshipUSA's 2016 and 2018 Expansion grants and 2018 Consolidated Appropriations award. Using industry intermediaries (i.e., expanded staffing agencies or group training organizations), high school career and technical education (CTE) students will become registered apprentices in local health care, information technology, and other high-demand sectors identified by the Bureau of Labor Statistics and the Kentucky Center for Workforce Statistics. Business partners agreed to enter into a formal three-year partnership agreement and hire apprentices. Other business partners will be identified within or near Perry County throughout the project. Among all the partners, only key decisionmakers serve on the stakeholder committee, signifying Kentucky Technology's importance to the region. The stakeholder committee is a high-level group of decisionmakers who guide policy, set objectives, and provide direction to the Kentucky Technology project manager and the larger Perry County community.

The project creates new and builds upon current partnerships to give high school CTE students and others promising and meaningful apprenticeship career opportunities in a geographically challenged area affected by the declining coal industry. Leveraging US Department of Labor funding through grants, the project is enhanced by two committed external experts: Robert Lerman, senior fellow at the Urban Institute and internationally renowned apprenticeship expert, and Nicholas Wyman, chief executive officer of the Institute of Workplace Skills and Innovation America, an expert with global experience in apprenticeship development and the use of intermediaries to expand modern apprenticeships. Both are consultants through the apprenticeship grants awarded to the Kentucky registered apprenticeship program and are collaborating on this endeavor as part of their ongoing work to expand high-quality apprenticeship opportunities in nontraditional occupational sectors throughout Kentucky.

Project Barriers and Strategies to Overcome Them

Barriers to participation in programs such as Kentucky Technology parallel those identified by previous research efforts, such as unreliable child care, scarcity of role models, and lack of paid training opportunities (Colborn and Jenkins 2015; Estyn 2014; Funk 2009; US Department of Labor 2015).³ But in Perry County, barriers to participation are heightened by extreme poverty, low educational attainment, geographic isolation, lack of transportation, and lack of employment opportunities. Persistent poverty and low income result from the impact of the drastic decline in the coal industry and other historical factors. Perry County has higher unemployment rates, poverty rates, and free and reduced-price lunch participation rates than the entire state of Kentucky. The county also has lower per capita income and educational attainment than Kentucky, on average. The average share of residents living in poverty is 17 percent statewide but is 26 percent in Perry County.

TABLE 1
Characteristics of Kentucky and Perry County

	Kentucky	Perry County
Population	4,468,402	26,553
Population change	3.0%	-7.5%
Adults with at least a high school diploma	85.2%	76.6%
Adults with at least a bachelor's degree	23.2%	12.6%
Free and reduced-price lunch rate	74.9%	97.4%
Median income	\$46,535	\$31,820
Poverty rate	17.2%	25.9%
Labor market participation rate	59.0%	46.2%
Unemployment rate (April 2019)	3.9%	5.0%

Sources: US Census Bureau, US Department of Education, and Kentucky labor market information.

To ameliorate and overcome these barriers, the Kentucky Technology stakeholder committee must concentrate efforts and expand on the following strategies.

Diversify occupations. Though Kentucky's workforce culture is undergoing dramatic change, entrenched perceptions of apprenticeship must also change. Apprenticeship is associated with men working in the trades. The registered apprenticeship coordinators and their leadership are working to expand the reach of apprenticeship to a broad array of occupations and to include diverse populations throughout the state (Colborn and Jenkins 2015; US Department of Labor 2015). Women and racial and ethnic minorities have low participation rates, though they have improved since the state received US Department of Labor grants to expand apprenticeship.

Beginning with the first expansion grant, the Kentucky registered apprenticeship program contracted with an information technology company to offer registered apprenticeships in the Appalachian region, moving outside of the trades. The applicant response was overwhelming and included a mixture of male and female applicants and an age range from 16 to 54. Of those enrolled,

87.5 percent completed the program in spring 2018. Most came from minimum-wage jobs, but all currently earn a solid salary in tech-related fields. The prospects for a high-quality standard of living have improved, as has the community's appreciation and understanding of apprenticeship (Interapt Skills 2018).⁴

Incorporate preapprenticeship models. Many apprenticeship experts recommend incorporating preapprenticeship (or soft skills) training into their programs to prepare lesser-skilled people for apprenticeship opportunities. Depending on the program, these skills range from time management, dress, and office decorum to communication, team building, and negotiating roles and responsibilities.

In Kentucky's Office of Career and Technical Education, the Tech Ready Apprentices for Careers in Kentucky program (TRACK) is a youth preapprenticeship program partnering with the Kentucky Education and Workforce Development Cabinet to provide secondary students career pathway opportunities into registered apprenticeship programs. The program is a preapprenticeship program only and is not a registered program with the US Department of Labor. Kentucky Technology plans to incorporate elements of TRACK into grades 9 and 10. These elements will bolster student confidence and acclimate them for their registered apprenticeship placement.

Kentucky Technology is a business- and industry-driven program designed to create a pipeline for high school students to enter preapprenticeship training. Employers tailor the program for their needs and select the CTE courses and students for their apprenticeship pathway. At the employer's discretion, students can receive credit for both classroom and on-the-job hours toward the training requirement. There are no costs involved except for the student's wages (Kentucky Department of Education 2017).

Enhance teacher professional development for STEM apprenticeship. Following the Carl D. Perkins Act and the Southern Regional Education Board's recommendations, the Kentucky Technology partnership will provide enhanced STEM educational opportunities for educators. Ultimately, we aim to create a learning community that embraces not only STEM but successful student transition into the region's workforce (Colorado Technical Education 2018; Southern Region Education Board 2014).⁵ We are designing a program to build capacity among educators to help all students transition into the workforce through registered apprenticeships.

Gain parent or guardian support for Kentucky Technology. Parents or guardians influence decisions about academics and students' career choices.⁶ Parents or guardians should understand the multifaceted benefits of Kentucky Technology, especially the registered apprenticeship component. Kentucky Technology is building multiple pathways to help parents and guardians meaningfully engage in the three-year endeavor and beyond. Drawing from international best practices, Kentucky Technology is incorporating such features as direct outreach, awareness sessions, parent pages on websites, a mobile application, and parent handbooks and other literature into its parent engagement endeavors. In Australia, for example, apprenticeship involves at least a half-million participants.

Apprenticeship Careers and other websites contain parent pages that help parents and their children navigate an apprenticeship program.⁷

Conquer financial obstacles to student success. Given regional demographics, Kentucky Technology's approach for overcoming financial obstacles to student success is multipronged. First, leveraging ApprenticeshipUSA Expansion dollars, Kentucky Technology will offset the costs of the registered apprenticeship required training instruction, which is typically tuition for community college courses, during the project's first year. Second, Kentucky Technology will work with career centers to leverage Workforce Investment Opportunity Act dollars to offset transportation, uniform, or technical equipment costs for students. Lastly, Education and Workforce Cabinet secretary Derrick Ramsey and Kentucky Community and Technical College System president Jay Box will make Kentucky Technology scholarships available for students when all other federal and state student aid has been exhausted.

Intermediary Partners in Kentucky Technology: A Means to Expand Apprenticeship and Reduce Barriers

In Kentucky, expanding the number of apprentices employed remains a primary challenge. In 2017, the Kentucky registered apprenticeship program began searching for a mechanism to expand apprenticeship throughout the state. How did Australia, Germany, Switzerland, the United Kingdom, and other countries manage to have such a large and successful apprenticeship force employed in business and industry? One answer lies in the role of an apprenticeship intermediary.

Soukamneuth and Harvey (2008, 1–2) define the role of the intermediary as an entity that serves dual customers: “For businesses, intermediaries identify the labor and skill needs of businesses in order to connect businesses to qualified workers. For workers, intermediaries provide training and/or supportive services or broker these services with community agencies to provide to workers.”

An intermediary generally recruits from a diverse pool of potential apprentices, working to match skills articulated by employers. An intermediary works with high schools (as is the case with Kentucky Technology), juvenile justice agencies, unemployed people, veterans, and higher education institutions to recruit people who may benefit and thrive from participating in apprenticeship programs. Intermediaries may also reach out to and recruit special populations such as people with disabilities, economically disadvantaged people, women or men for gender-challenged occupational settings, single parents, displaced homemakers, and people with limited English proficiency. Kentucky is using the intermediary model to expand apprenticeship in Kentucky Technology and in other state apprenticeship programs. Since 2017, the Kentucky registered apprenticeship program has signed five intermediaries: Hamilton-Ryker, the Kentucky Science and Technology Corporation, Organic Grass Roots, the Robert C. Byrd Institute, and the Institute for American Apprenticeships.

Screening applicants for potential apprenticeship openings and providing required soft skill development are routine functions of an intermediary, who takes direction from business leaders. In Kentucky Technology, the intermediary will communicate with the health care community. In addition to developing soft skills, most intermediaries globally are employee industry consultants who understand the skills required to meet business and industry specifications. The industry consultants are able to work with required training providers, such as Hazard Community and Technical College faculty in Kentucky Technology, to ensure the curriculum taught to CTE students and other potential employees meets or exceeds contemporary industry standards. Industry consultants employed by intermediaries also ensure that curricular materials are modified as innovations occur in a particular occupational sector.

An intermediary provides each apprentice a mentor. A mentor and an apprentice sign a contract for the life of the apprenticeship. Wyman (2015, 150) notes, “Mentors look for—and are skilled at spotting—the signs of doubt, fear, and frustration that apprentices like many new employees (and their supervisors) might have over the course of the placement. This way, they can intervene in a productive and helpful way before problems grow, conflicts occur, and things begin to feel helpless.”

Unlike traditional employment agency models, if apprentices struggle or fail at a placement, they return to the intermediary, specifically their mentor, for additional training, academic support at the Kentucky Technology campus, or other wraparound services, such as substance abuse counseling or training in financial literacy. If acceptable to the original placement site, once the apprentice completes the additional training and other requirements, the apprentice returns to the original placement. If the original jobsite declines, the apprentice goes back into the pool of eligible apprentices for placement elsewhere.

In most models, the intermediary is the employer of record until an apprentice completes the program and earns a journeyman certification. An intermediary may be specific to one occupation or offer services to a range of employers. In rural areas, such as Perry County, where there are several small employers, an intermediary aggregates their needs, eases administrative burdens (particularly because dealing with young CTE student apprentices is not in their bailiwick of human resource expertise), and develop or enhance partnerships with all relevant stakeholders.⁸

These functions distinguish intermediaries from other employment agencies and workforce development organizations. There is a focus on high performance strategies that surpass job matching (Soukamneuth and Harvey 2008).

As a partner in the Kentucky Technology model, the intermediary will

- create seamless collaboration during the 36-month project and beyond;
- develop additional STEM partnerships between business, industry, and community stakeholders to support young people engaged in STEM apprenticeships;

- engage in strategic efforts within eastern Kentucky to advance tech-sector opportunities and prepare people to work within the digital economy;
- work collaboratively to ensure project objectives are met while developing new opportunities for Perry County students;
- identify skills and changes necessary in the curriculum offered by Perry County, Hazard Schools, and Hazard Community and Technical College; and
- attend and engage in stakeholder and community meetings.

Conclusion

Kentucky Technology’s intended outcome is to lift people out of the myopia of traditional education and workforce systems and create a new dynamic entrée for students entering the world of work through apprenticeship. An assessment of local entities and programs demonstrates a wealth of resources. Rethinking and realigning those resources in a deep community-based partnership, led by businesses, is bringing a dynamism not seen before. Preapprenticeship and co-ops in 9th and 10th grades pique interest in subject areas and the tangible relationship to the future of gainful work. Curricula aligned with contemporary business demand and rich in academic traditions sets in motion apprenticeships in health care facilities and information technology businesses for success for 11th and 12th graders. Required training instruction, necessary for business prowess, is developed with community college faculty. Ongoing dialogue among partners strengthens the model and stimulates discourse regarding future possibilities. Well beyond traditional staffing services, the intermediary provides wraparound services, staving off the barriers that plague student success. It is a sustainable education and workforce model with low overhead. Plans are under way to create two additional Kentucky Technology campuses in metropolitan areas of Kentucky in 2020. Working in gray areas without hard-and-fast rules can be challenging, but it has its perks, and Kentucky Technology is certainly a perk for Kentucky.

Notes

- ¹ Applications for New Awards: Pathways to STEM Apprenticeship for High School Career and Technical Education Students, 83 Fed. Reg. 23263 (May 18, 2018).
- ² Taylor Upchurch, “HCTC Holds Employer-Partner Signing for KTECH Model,” WYMT Mountain News, May 9, 2019, <https://www.wymt.com/content/news/HCTC-holds-employer-partner-signing-for-KTECH-Model--509723741.html>.
- ³ See also Julia Muir, “Overcoming the Barriers to Accessing Apprenticeships,” Gaia Innovation blog, January 17, 2019, <https://gaiainnovation.com/overcoming-barriers-accessing-apprenticeships/>.

- ⁴ See also Callie Murray, “From Coal to Coding,” WorkforceGPS blog, February 23, 2018, <https://apprenticeshipusa.workforcegps.org/blog/From-Coal-to-Coding/2018/02/23/19/13/From-Coal-to-Coding>.
- ⁵ See also Muir, “Overcoming the Barriers”; and Carl D. Perkins Career and Technical Education Act of 2006, Pub. L. No. 109-270 (2006).
- ⁶ See Muir, “Overcoming the Barriers”; and “Apprenticeships: Involving Parents in the Recruitment Process,” BPP Professional Apprenticeships, March 13, 2015, <https://www.bpp.com/insights/bpp-involving-parents-in-recruitment>.
- ⁷ “Preparing My Child for the Workforce: A Parent’s Guide to Coaching and Mentoring Their Child,” Apprenticeship Careers Australia, accessed September 13, 2019, <http://www.apprenticeshipcareers.com.au/Parents-Advisors/Parent-eGuide>.
- ⁸ Myriam Milfort Sullivan, “Seven Ways Intermediaries Help Develop Apprenticeship Programs,” Jobs for the Future, October 7, 2016, <https://www.jff.org/points-of-view/seven-ways-intermediaries-help-develop-apprenticeship-programs/>.

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Melissa Vermillion is director of grants and contracts for Hazard Community and Technical College. She has written successful grant applications to various departments and agencies (e.g., the US Department of Agriculture, Economic Development Administration, and National Endowment for the Arts), securing more than \$20 million in funding. She recently secured funding to develop the first medical-assisting simulation clinics and training labs in Kentucky. Vermillion has a bachelor's degree in business administration and a master's degree in business administration from Morehead State University.

Ervin Dimeny, executive director and adviser to the Kentucky Education and Workforce Cabinet and commissioner of the Labor Cabinet, worked with national and international experts to make the apprenticeship a successful workforce development model in Kentucky. Dimeny, a former apprentice, is a graduate of the Brandeis School of Law at the University of Louisville.

Deborah Williamson began her career with the Kentucky Court of Justice, establishing herself as a dynamic court executive officer serving elected members of the judiciary statewide. She has spent most of her career helping courts and other state government agencies develop business and strategic plans, supporting programs for disenfranchised populations through federal and state grants, and developing innovative social programs, with an emphasis on programming for at-risk youth. She has devoted the past three years to developing Kentucky's registered apprenticeship program and securing federal funding for the same. In 2019, Williamson was recruited to the New Mexico Department of Workforce Solutions to oversee the labor relations division, which contains two bureaus devoted to civil rights violations. She holds a PhD in sociology from the University of Kentucky.

From Father to Son: Reflections on Apprenticeship

Theodore J. Traum

My father was a toolmaker whose career ended in retirement from the Frankford Arsenal in Philadelphia as its production manager. With 600 reporting employees from the “shops,” he supported and interacted with the engineers of the world-famous Pitman-Dunn Laboratory at the arsenal. His takeaway from his work experience and his direction to me for my career was that the best engineers were people who had served in an apprenticeship. Having lived through the Great Depression, both my father and grandfather, a barber, would always say, “Better learn a trade so you will always be able to make a living.”

My career started in high school. My father intervened with school officials and made sure I went through the academic and industrial arts programs to earn my first high school diploma. He also spent time with me on woodworking and instilled in me the importance of his tools and their care. Later, I would hear other tradesmen say, “I’d rather lend you my wife before I’d lend you my tools.”

I had several apprenticeship experiences in high school and beyond and, in fact, earned two high school diplomas (more on that later). Like today’s modern apprenticeships, my experiences consisted of on-the-job training and related technical instruction in the classroom. I completed my first apprenticeship after enlisting in the Pennsylvania Air National Guard’s 270th Electronics and Installation Squadron during high school. I became a telephone cable splicer. Soon after, I entered the marine electrical draftsman apprenticeship program for J.J. Henry Naval Architects.

After high school, my dad entered the picture again. Although he was proud that I was learning and earning by doing, he encouraged me to pursue a college education. He made a deal with me. He would provide room and board if I was accepted into Drexel Institute of Technology (now Drexel University) in Philadelphia. I was accepted and entered Drexel Institute’s Evening College in electrical engineering. I continued to work at J.J. Henry during the day.

What I didn’t know at Drexel, and discovered later on, was that the evening college professors were head and shoulders above the daytime college professors. This is typical of applied technical programs and characteristic of apprenticeship classroom training. Why? The evening college professors were engineering practitioners at the Pitman-Dunn Lab, General Electric Reentry Systems, the Philadelphia Naval Shipyard, Radio Corporation of America, and other reputable companies. Two years passed, and I completed my marine electrical draftsman apprenticeship at J.J. Henry. Unfortunately, the shipbuilding industry was heading south both literally and figuratively. My future looked dim at J.J. Henry, so I

looked for another apprenticeship with an eye on a backup plan if I didn't complete my engineering degree from Drexel.

I applied for my third apprenticeship at the Philadelphia Naval Shipyard hoping to become a toolmaker like my father. I was selected for the machinist apprenticeship program. (My father was a little disappointed because I would don a blue apron instead of the toolmakers' white one.) The program included 40 hours of classroom work every month and rotation through all the shipyard's metal shops, foundry, structural, forge, and outside machine shop (onboard ship work). Being exposed to an industrial work environment, efficiency and machine design became my new interest, and I changed my major from electrical engineering to industrial and mechanical engineering. This on-the-job training experience exposed me to previously unfamiliar avenues. The apprenticeship experience fueled my career pathway.

During this period, I found a mentor who convinced me of the importance of public speaking. I joined the local Toastmasters International and later won regional-level speech contests. This training experience benefited me in both communication skills and management skills and should be noted by employers and designers of apprenticeship programs.

In 1976, seven years after starting college, I graduated from Drexel University with BS in mechanical and industrial engineering and completed the Philadelphia Naval Shipyard apprenticeship. Because of the 40 hours of classroom work I had every month for four years during my apprenticeship, I also received my second high school diploma.

Eventually, I made groundbreaking inroads into medical waste disposal, asbestos abatement, energy engineering, and biocontainment engineering. I am of average intelligence. In my opinion, my success can be attributed to the training programs and apprenticeships I engaged in during my early career. Those experiences gave me a practical background, a tenacity to succeed, the experiences to see what others can't, and the ability to invest in ideas and turn them into reality. My early experiences have resulted in formulating biocontainment design and operations in the United States, Southeast Asia, and South America. Today, I am the teacher. In a few months I will be 70, but I still wake each day hungry for a new challenge. I'm working on a standards committee on testing requirements for facilities for compounding pharmacies, continuing my work with the international corporation I founded, in addition to teaching and consulting. I'm looking toward making biocontainment facilities worldwide sustainable through evolving technology.

Theodore Traum has more than 30 years of experience in engineering, with a focus on high and maximum containment laboratories, biomedical facilities, hospitals, and research facilities. Traum is nationally and internationally renowned for his oversight, management, and certification of biocontainment facilities.

4. Preparing Young Adults for the World of Work

The first chapter in this section could have been placed in almost any other section. Prodigy Ventures involves enlightened variations on preapprenticeship and apprenticeship training. Many modern apprenticeship programs have evolved from the tried-and-true earning-while-learning a marketable skill, but Prodigy Ventures takes the concept further. In “Prodigy Ventures: Using Modern Apprenticeship to Realize the Exceptional Abilities of Youth,” Stephanie Frances writes about her company’s leading-edge approach to preparing young adults for the world of work based on the conviction that “every young person is prodigious, no matter background, education level, or natural talent. Each has an exceptional ability to deeply affect this world and participate fruitfully in the new economy. But most are not coming close to their potential.” Prodigy, a craft coffeehouse in Denver, and its parent company, Prodigy Ventures, a network of social enterprises, uses a unique approach to develop growing talent in young adults. The proof is in the pudding. Prodigy has earned recognition as the Best New Coffeehouse in Denver (2017) and has a consistent 4.6-star Google Review rating and a 4.5 Yelp rating.

“Work-based mentoring programs have received little research attention,” state Jean Rhodes and Matthew Hagler in their chapter, “Workplace Mentoring Programs for Youth.” The authors open with the poignant observation that “Although a lack of jobs is commonly cited as the leading cause of youth unemployment, recent labor market surveys suggest that youth unemployment rates have not fallen in proportion to expanding job openings, and some companies are actually struggling to fill middle-skill job openings.” They then review the literature on the relationship between workplace mentorship and a host of youth personal development and success factors and cite examples of stand-out programs and a compilation of best practices. The authors also bring into play the benefits employers received from substantive workplace mentoring, an often-overlooked component of the most successful apprenticeship endeavors.

In a longitudinal study, Maura Kelly, Lindsey Wilkinson, and Luis Nuñez in “Evaluating Preapprenticeship in the Construction Trades in Oregon” ask study participants in two preapprenticeship programs to evaluate 14 skills, from very weak to very strong, on the first day of preapprenticeship training; the last day of preapprenticeship training; and one year after completing their preapprenticeship program. The two programs the authors studied aimed to diversify Oregon’s construction workforce and consisted of women and people of color. Along with skills gained, the authors examined whether program participants moved into apprenticeship or the workforce upon graduation. The authors define the factors at play in their findings, including differences between completers and noncompleters, and the impact of ongoing support during preapprenticeship and subsequent apprenticeship training. With regards to the impact of ongoing support on apprentice

retention, in particular, the authors found “the effect of social support was even larger than the effect of financial supportive services evaluated.” All these findings have implications beyond the construction trade.

Prodigy Ventures: Using Modern Apprenticeship to Realize the Exceptional Abilities of Youth

Stephanie Frances

Four years ago, I and a team of workforce development educators founded Prodigy Ventures on the conviction that every young person is prodigious, regardless of background, education level, or natural talent. Each has an exceptional ability to deeply affect this world and participate fruitfully in the new economy. But most are not achieving their potential. After a decade in the world of workforce development and public education, we realized that the way this country “does” education and employment is broken.

Education structures are outdated (created for an industrialized nation), largely ineffective (employers rank high school graduates as “woefully unprepared” for the workplace, and 40 percent of employers can’t find employees with much-needed skills) and irrelevant (most schools don’t resemble the real world in environment, culture, or norms). And employers aren’t filling the gap (only one-fifth of employees report getting on-the-job training from their employers in the past five years, and employers are more likely to hire outside talent than to develop talent from within). Add to this, employment practices in the US are deeply inequitable (youth unemployment among black, Hispanic, and First Nations young adults is nearly double that of white young adults). All of this encourages disengagement, and it leaves our country vulnerable as we train a new generation for the new economy.

The health of our city and of the country’s workforce and education systems hinge on the hidden talents of our young adults. At Prodigy, we believe in the upside-down country—one that recognizes greatness in all young people (especially those on the margins) and that flips traditional structures and dismantles silos.

We need an innovative, upside-down process to activate those talents. Prodigy’s team has been deconstructing these questions: How will we activate young talent, talent that our traditional paradigms aren’t activating? What alchemy will we use? What circumstances will unlock this talent?

Prodigy believes there is a significant opportunity within the apprenticeship model to fill a gap in this education-to-career ecosystem. Through apprenticeship, education and employment are interwoven to create a vibrant landscape of learning spaces and a new generation of workers with deep investment and transformational skills. This intentional design sees the workplace as a ripe structure for accelerated learning and sees deep learning and deep work as inherent motivators for employees. Within these apprenticeships, young adults can discover their greatness while learning skills for the new

workforce, in an accelerated timeline. As we crafted our apprenticeship model in Denver, Nicholas Wyman was articulating this sentiment in his book *Jobs U: How to Find Wealth and Success by Developing the Skills Companies Actually Need* that “apprenticeships [are] our best weapon in the war to reduce unemployment, rebuild the middle class, and restore America’s status as a leader on a global economic scale.”



Photo courtesy of the author.

Prodigy is both an employer (we operate a craft coffeehouse in Denver) and a talent development entity (we use apprenticeship to help young adults, especially those on the margins, build foundational skills and mind-sets to become transformational leaders and sustain meaningful careers).

Founded in 2015, Prodigy Ventures is a network of social enterprises where the best of instructional strategies and cognitive psychology are infused into an intentional workplace culture. Young adults disconnected from school or employment are invited into apprenticeship as humble learners of life, self, and craft within a high-standards enterprise. Here, they discover their inherent greatness and the power to go forth and enrich their city. Our first enterprise, Prodigy Coffeehouse, opened 2016 in Globeville-Elyria-Swansea. The enterprise is run by 18-to-24-year-olds who have little or no work experience and no craft coffee skills when they begin. We use best practices in intrinsic motivation, accelerated learning, and culture building to train apprentices to operate a high-quality enterprise.

The program's impact has been encouraging. Ninety percent of small businesses fail within the first three years, but Prodigy's apprenticeship model has thrived. On the business side, Prodigy won Best New Coffeehouse in Denver (2017) and has a consistent 4.6-star Google rating and 4.5 Yelp rating. This year, on the business side, we will generate enough internal sales to turn a profit. On the mission side, Prodigy has trained more than 100 young adults in foundational workplace skills and hired 36 to be apprentices. We are proud to have an 85 percent graduation and retention rate (despite hiring disconnected young adults with little or no work experience). And apprentices are performing. Seventy-two percent of graduates are working in career-pipeline positions, earning at or above Prodigy wages. Just last month, Simone, a 2018 Prodigy graduate, won gold at a statewide barista competition, was featured in *Barista Magazine*, and was invited to compete at the National Barista Championship Qualifiers. Other graduates have gone on to manage coffee shops, graduate from college, earn licensure, and be hired into professional, salaried positions in Denver.

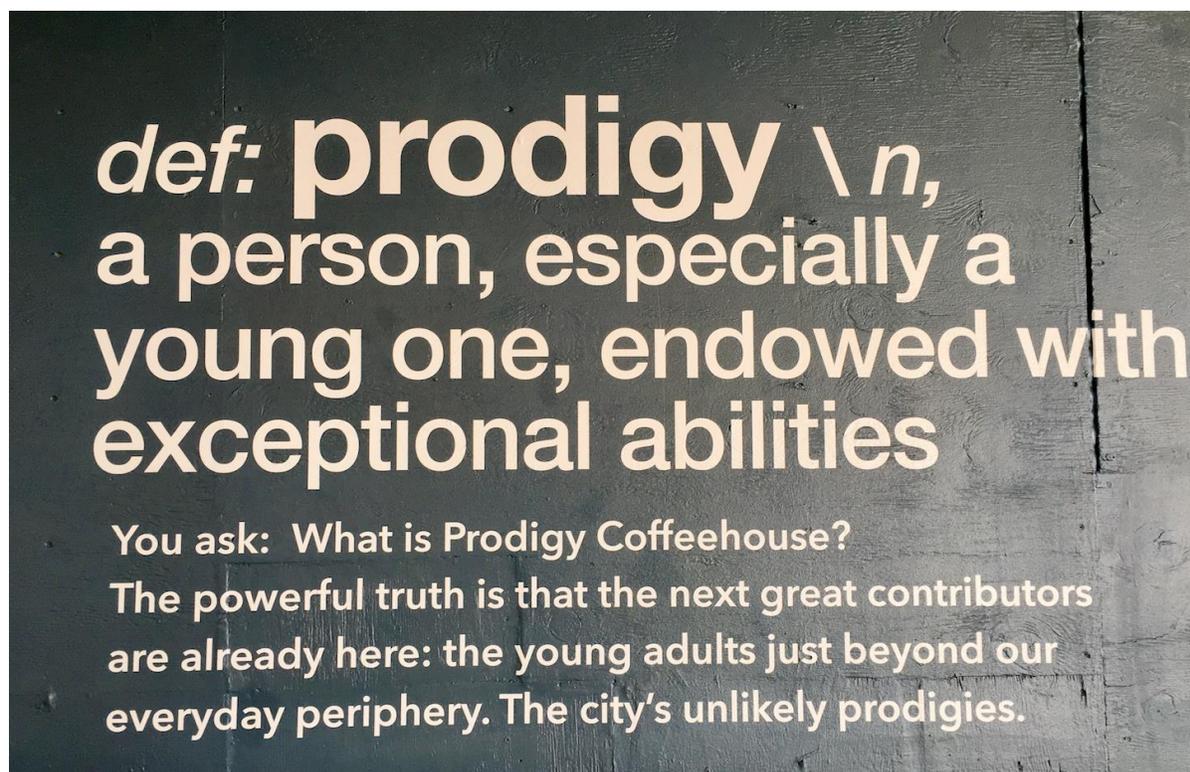


Photo courtesy of the author.

Leslie Herod, Colorado state representative for House District 8, described Prodigy this way: "I believe that Prodigy is doing some of the best work in the city for [young adults]. Prodigy's apprenticeship model brings the highest-quality education strategies into a workplace where youth are inspired to reengage in learning. I have watched youth who dropped out of high school get excited about math, science, and business through Prodigy's apprenticeship. At the same time, young adults are

learning a craft and to appreciate craftsmanship. Apprentices are gaining transferrable skills that are not just based on the needs of employers today but jobs that have not yet been created.”

Prodigy believes the journey to self-sufficiency begins and improves with meaningful work. Our yearlong apprenticeship program is designed to create personal transformation through the vehicle of a high-challenge and high-support workplace. The program includes activities that support the study of self and craft. From these interventions, we expect these young adults will build skills, mind-sets, and social and economic capital for success in the new economy.

We define apprenticeship as intentionally infusing learning strategies into a work environment to develop skills, mind-sets, and understandings that have long-term benefits for both apprentices and employers. With apprentices, we talk about it as “deep work and deep learning in a culture of healing.”

Apprenticeship done well taps into the reality that all humans are intrinsically motivated to learn. And the workplace is a ripe place for deep learning. Behavioral science research about intrinsic motivation, popularized by Daniel Pink in his best-seller *Drive: The Surprising Truth about What Motivates Us*, tells us that people, once their basic needs are met, are intrinsically motivated by autonomy, mastery, and purpose. Autonomy is the desire to self-direct, mastery is the desire for progress and high-level skill attainment, and purpose is connectedness to a cause greater than yourself. Workplace apprenticeships are ripe to activate intrinsic motivation to both work and learn. At work, we can provide the tools, resources, context, and opportunity for self-direction; the intense training for mastery of skills; and purpose, which includes building up and shaping a community, and sharing their learning with other employees.

Below, we share some of the most impactful aspects of Prodigy’s model that we believe can be transformational in any organization in any city. Here’s what it looks like on the ground.

Preapprenticeship

Prodigy’s apprenticeship program begins with a 40-hour preapprenticeship training, an intensive introduction to workplace mind-sets, craft coffee, customer experience, and exploration of personal assets. We offer preapprenticeship intensives four or five times a year to cohorts ranging from 5 to 20 preapprentices. Preapprentices receive a stipend for successful completion of each phase. After completing the preapprenticeship, apprentices are hired with pay starting at \$9 and hour plus tips (average starting wage is \$13.50 an hour). Our hiring practice is upside-down, in that we hire those who are not necessarily the most qualified. In fact, if a preapprentice can find employment elsewhere, we support that effort. Prodigy hires apprentices based on where they live (hiring hyperlocally is important to our community wealth-building efforts) and their desire for deep learning and deep work. We have

offered apprenticeships to anywhere from 30 to 100 percent of each cohort of preapprentices, depending on the cohort's makeup and enterprise's current needs.

Apprenticeship

Prodigy provides technical and applied skills training through professional development modules and in-the-moment coaching taught by educators, business mentors, and coffee experts in both classroom and on-the-job training contexts. Prodigy's leadership team consists of an executive director, a director of learning, an operations manager, and a manager apprentice. (We are currently hiring for an educator to join the team.)

- **On-the-job training.** Apprentices work an average of 24 hours a week for a 6-to-18-month apprenticeship, for an average of more than 1,000 hours of training or experience. Each shift, apprentices receive support and training from a peer leader or educator.
- **Classroom instruction.** Apprentices learn outside their barista shifts in professional development modules taught in Prodigy's community meeting space twice a month. Instruction also happens on learning excursions to partner coffee shops and roasters and during guest-barista shifts. Weekly one-on-one coaching and goal progression with our director of learning is also key to engagement and accelerated learning.
- **Internal certifications.** A series of milestones where apprentices demonstrate varying levels of mastery in coffee knowledge, barista skills, customer experience, and mind-sets to receive promotions, raises, and internal certifications, including barista 1, barista 2, shift lead, and manager on duty.
- **Industry-recognized certifications.** Apprentices have become certified, at no cost, by the Specialty Coffee Association, the American Barista and Coffee School, the Occupational Safety and Health Administration, ServSafe, and FirstAid.
- **Mental health and wellness.** Preapprentices and apprentices have access to no-cost wellness and therapeutic supports individually and in groups. They attend at minimum 15 hours of wellness classes, where they are introduced to the concept of and basic tools to support mental health. During their apprenticeship, they also receive an "organic" mental health assessment and access to a year of one-on-one therapy.

Leadership Development and Management Training

All apprentices who pass the barista 1 level progress to study six transformational leadership mind-sets and demonstrate them within the Prodigy community as part of their professional development. Because Prodigy aims to reflect the population the project serves, we have developed a management

track for apprentices to grow into leaders. This intense training over two years focuses on skill development to operate a high-quality retail coffee business, start-up experience, and transferrable business, leadership, and training skills. Prodigy apprentices who have earned promotions to the shift lead level and apprentice graduates are eligible to apply for the operations manager training program. In this way, Prodigy will fulfill an exciting goal, which is for Prodigy's social enterprises to be owned and operated by apprentice graduates. In 2019, the first apprentice graduate, Odalis, was hired into a salaried full-time management position.

Job Development and Transition to Career

Apprentices have access to paid experiences such as job shadows, internships, stage shifts, informational interviews, interview strategy, and job development as they prepare to graduate from their apprenticeship. Prodigy has also developed relationships with local employers who have preferred hiring for Prodigy graduates.

We have become a talent pipeline for Denver's craft coffee industry. Because of the high caliber of training, coffee shops around town are hiring Prodigy preapprentices, apprentices, and graduates. In 2018, Prodigy's talent was hired at Blue Sparrow Coffee, Crema Coffee House, Logan House Coffee Company, Rivers and Roads Coffee, Starbucks, and Under the Umbrella Café and Bakery. Recently, the owner of a busy craft coffee shop hosted an apprentice as a guest barista. His email later that week read, "[The apprentice] just 'killed it' over the weekend. We could not have been more impressed. I know she's a key member of your team, but we'd love to make her a regular, part-time member of our team. I'm not sure if there's a way to 'share' her, but if you (& she) would be willing...we'd love to explore this further."

Another Prodigy graduate and longtime Northeast Denver resident, Simone, ignited a lifelong career path during her apprenticeship. While working as an apprentice at Prodigy, Simone earned a Specialty Coffee Association Barista Level 1 certification, and we connected her to an exclusive interview opportunity at Crema Coffee House, one of Denver's best craft coffee shops. She has now worked at Crema for a year and is a key member of its team. Only one month after her graduation from Prodigy, she won gold at a statewide barista competition, was featured in *Barista Magazine*, and was invited to compete at the National Barista Championship Qualifiers. She said about her apprenticeship, "Prodigy is the foundation for everything I know. I wouldn't have gotten hired [at Crema] if I didn't work at Prodigy.... Prodigy, for me, was finding the one thing that I cared about, [craft coffee], and can pursue professionally, and there are careers now where I can go to school. There are biologists who are going to school just for coffee. It's a huge industry. I found something that gives me a lot of room to figure out what I want to do." We are proud of Simone's commitment to craftsmanship and her ability to leverage relationships built at Prodigy.

Methodology

Prodigy's strategies are based on a combination of research and experience. Our program design and measurement tools are informed by research on the intersection of poverty and brain science. We have also adopted strategies from research on posttraumatic growth and the science of learning. Our founding team was trained at Eagle Rock School and Professional Development Center. Our training protocol was influenced by the Understanding by Design framework, with elements of design thinking and the workshop model of delivery. In addition, our culture of healing is modeled after the culture at Homeboy Industries in Los Angeles, the world's largest gang intervention program.

Prodigy's approach is influenced by scientific research from Economic Mobility Pathways in Boston, which has built a network of economic development organizations focusing on using brain science to build pathways out of poverty. Economic Mobility Pathways and the Center on the Developing Child at Harvard University explain that working memory, inhibitory control, and mental flexibility cannot fully develop in youth who grow up with acute stress caused by poverty—in a world where violence, unpredictability, scarcity, and lack of control are constants. Without these executive functioning skills, youth struggle under the tyranny of the urgent. Prodigy's training is designed to enhance executive functioning skills. The discipline to stay on task (inhibitory control), remember something that happened with a customer yesterday and apply the learning to today (working memory), and understand why a teammate might be struggling to grasp latte art (mental flexibility) are a few examples.

Learning Science

What are the constructs of the apprenticeship and work environment that set the stage for deep learning at Prodigy? First, we provide a high-quality job and high-caliber training. We pay a living wage, provide frequent paid professional development, and have flexible scheduling and a robust culture. These are integral to motivating apprentices but are not enough. We must also tap into their desire for learning and work. Five key components for deep learning and deep work, based on learning science, are built into Prodigy's learning model.

1. Clear, Relevant, and Ongoing Success Milestones

Learning requires setting clear standards and providing scaffolded teaching to help learners achieve success. High standards and high support are key. The barista curriculum is framed around a series of attainable certifications designed to set high expectations and provide opportunities for frequent raises and promotions. Each is aligned with skills needed for apprentices to experience self-worth and accomplishment as a barista, as well as foundational skills for all workplaces.

Apprentices begin on-the-job training focused on mastering the barista 1 certification. Barista 1 is scaffolded into four evaluations that build upon each other: coffee knowledge, customer interactions and point-of-sale competency (checkout shift), espresso bar skills, and professional evaluation. Apprentices work at their own pace within small peer groups, individually with identified learning resources (we have evaluation tools that are also powerful learning tools), and with our director of learning and coffee craftsman on staff. The apprenticeship scope and sequence is designed to tap into both intrinsic motivation (autonomy and mastery) and external motivation (raises and increased responsibility). From here, apprentices move onto barista 2, shift lead, and manager-on-duty certification.

2. Community of Learners

All youth, no matter what experience, credentials, or confidence they bring, begin Prodigy on a level playing field. Apprentices learn the same skills, with the same competency requirements, together. Apprentices study and execute the mind-set “I am responsible for my own growth and learning” and agree to continual growth. Together, they build a community of learners with a high level of responsibility.

Apprentices are responsible for running a high-standards coffeehouse, something they can do only in collaboration with each other. They are then provided the appropriate coaching, support, restorative resources, and paid time in the community to achieve high expectations in a high-quality business. This required collaboration is an in-demand transferrable workplace skill for the new economy.

3. Peer Teaching and Peer Learning

Teaching is a metacognitive skill that requires not only an understanding of the content but the ability to articulate the content to others, build relationships with learners, and customize teaching strategies for different personalities. This is why we show apprentices how to train and teach newer apprentices. Peer teaching and learning is associated with greater psychological well-being, social competence, communication skills, and self-esteem. It is correlated with higher achievement and greater productivity in terms of enhanced learning outcomes. Becoming a teacher also means apprentices are rebuilding the neural pathways required for metacognition, the same neural pathways damaged by the trauma of poverty and other adverse childhood experiences.

4. Time on Task and Deliberative Practice

Expertise in any skill requires a major investment of time. Researchers estimate it takes 50,000 to 100,000 hours to be a master chess player. This, often referred to as “time on task,” is essential for

mastery. But time alone is not sufficient. Mastery also requires deliberate practice, where the learner is engaged in a loop of strategizing, practicing, reflecting, seeking and using feedback, and making adjustments. In-the-moment learning is robust at Prodigy, with a three-to-one learner-to-teacher ratio. Workplaces are set up well for this. At Prodigy, apprentices work and learn for 1,300 hours (average for a yearlong apprenticeship) and interact with 74 customers each shift, providing the opportunity for rapid and deliberative practice. They experience accelerated learning.

5. Generative Feedback

On the first day of preapprenticeship, young adults learn that feedback is not their enemy. It's not a corrective practice. It even transcends the idea of "constructive criticism." At Prodigy, feedback is a natural, dignifying, and essential part of continuous learning. We give it and receive it as if it's drinking water because we care about continual learning. Our educators are craftsmen in this realm.

First, we mine for the good. We catch apprentices doing well and applying their learning, and we celebrate. Next, we focus feedback on the areas identified for their individualized learning trajectory. At any one time, a novice barista could improve upon many things. We refine feedback and focus apprentices on the next most important knowledge, skill, or reasoning needed to progress in their hierarchy of learning.

For example, Domonic might take eight minutes to make a latte for a customer, which is too long according to our standards. But at this point in his learning, we're focusing on quality, not speed.

Our operations team manages the customer experience in this situation, but on the training side, we focus feedback on Domonic's quality goals. We focus on data tracking for quality: taking the specs on milk temperatures, inputs, outputs, and taste. If those hit the mark, we celebrate. If they don't, we address it through analytical questions. But we don't compound it with negative feedback about his timing and his latte art. That comes after he has achieved a minimum quality standard.

Also, we are sensitive to situations and personalities. Feedback or redirection is sometimes best in the moment. Other times, if feedback is minor or requires a more in-depth conversation, we wait for one-on-one development time or build it into a classroom learning opportunity for the team.

How does this entire package prepare apprentices for the future of work? We teach apprentices how to be learners in the community and how to be teachers. Deep understanding of what it takes to be a learner transfers into every context of their lives and sets them up for continual mobility in the workplace.

Measuring Workforce Preparation for the New Economy

Alonzo drops out of high school to care for his single mother who slipped at Sam's Club and injured her back. He gets a job as a courtesy clerk at King Soopers, and he and his mother move into transitional housing. He reenrolls in school, but his dyslexia makes it tough. He graduates but cannot read or write above an elementary level. He finds an apprenticeship program across the street from his building and finds the resolve to learn a new trade. His reading improves. He joins a book club with his colleagues. He becomes shift lead and then manager on duty.



Photo courtesy of the author.

What we most like about stories like this is the earning power part—the part where he gets a job or finishes school or the part where he has the power to pay bills and care for his family. We believe his earning power is his ticket out of poverty. We design programs to get him that earning power.

Traditionally, workforce development programs are designed based on the belief that a certain set of skills, mind-sets, and attributes—a certain earning power—will be the difference between a life entrenched in poverty and the life we aspire to. In other words, we design workforce development

programs based on an industrialized economy that taught us that sustained input (hard work) creates a reliable output (wealth).

To be fair, the traditional workforce development model has evolved to acknowledge the underlying barriers that would make sustained input feasible. Workforce development has begun to understand the whole person and treat psychosocial barriers as economic barriers. The traditional model now includes case management alongside job placement services. We train our staff in motivational interviewing. We provide resources for child care and transportation. We talk about systemic barriers. We become trauma informed.

And yet, we still see programs modeled on the belief that our economy rewards people who can overcome barriers with a certain sustained input of hard work and resolve.

Prodigy Ventures is a social enterprise offering economic mobility to disconnected youth through coffeehouse apprenticeships in Denver. We believe in earning power and holistic care for systemic barriers. But we also believe economic mobility requires more than earning power. It even requires more than holistic care and addressing the systemic barriers in someone's life.

Since its founding in 2015, Prodigy has measured economic mobility in wider terms than earning power. Our measures have included indicators of earning power, social capital, 21st-century workforce mind-sets, and psychosocial healing. New research from the Urban Institute, Stanford University, and the US Partnership on Mobility from Poverty validated our approach. This team found that economic success, power and autonomy, and being valued in community are essential levers for economic mobility. We welcomed a research-based framework that added to the traditional measure of economic success and have set 2019 program outcome goals to align with the framework:

Economic success. Apprentices increase earning power by building technical skills, earning industry-recognized certifications, and receiving promotions. They earn a living wage and enroll in postsecondary education programs. 2019 outcome goal: Apprentices increase earning power.

Power and autonomy. Apprentices understand their ability to wield control and influence over their lives and environments. They activate their talents. They identify long-term goals. They show growth in measures of leadership. They engage in Prodigy's mental health resources. 2019 outcome goals: Apprentices build foundational skills for the new economy, and apprentices experience healing.

Being valued in the community. Apprentices increase measures of social capital. They activate a network of professionals outside their immediate circle of family and friends. They believe they are needed. They experience belonging. 2019 outcome goal: Apprentices increase social capital.

By adding power and autonomy and being valued in the community to our evaluation plan, we ensure that economic mobility does not depend on earning power alone.

Economic mobility can no longer be an inside job. It can no longer be about people managing their own bootstraps, removing their barriers, and getting on with their life. We must create workplaces that explore what power and autonomy mean to young people who grew up in systems that marginalized their families and prescribed minimum-wage jobs. We must create workplaces that explore the meaning of belonging. Belonging that means more than team building. It cultivates and maximizes each person's unique abilities.

Throughout his apprenticeship, Alonzo has trained at least 15 new apprentices. As manager on duty, he is responsible for the coffeehouse on Sundays. He troubleshoots customer issues, is accountable for sales goals, oversees training for new apprentices, and ensures they meet individual goals. He makes decisions and can provide a rationale for each. He rectifies the point-of-sale and cash drawer at the end of the night. He presented with a team of Prodigy apprentices to a global audience at the Global Homeboy Network gathering in Los Angeles last year. He's received 4 raises in 18 months.

Alonzo is proof that economic mobility depends on more than earning power. He reminds us that workforce development programs must respond to a new economy, an economy that requires independent agency while maintaining a sense of belonging. He shows us what we should measure.

Culture Development

We work alongside young people who have, in many cases, experienced multiple adverse childhood experiences, deep pain they are grappling with as they transition to adulthood. Stereotypes of these young adults in the media are negative. But in most cases, instead of transmitting this pain to others, we see that young people are capable of transforming their pain into productivity and hope. And we see this every day at Prodigy. We hear things from apprentices like, "Prodigy is more than just a job. It's a place where anyone from everywhere can come in and feel at home. It's a positive workplace that is less like a job and more like a family." And, "Prodigy is what I like to think of as a sanctuary...and we want our customers to feel that way as well."

I believe Prodigy's "secret sauce" is found in our culture. We have modeled our culture on that of Homeboy Industries, the world's largest gang intervention organization. Theirs is a culture of healing, driven by founder Father Gregory Boyle, grounded in the concepts of mutuality and kinship, best summed up by the notion that "if we have no peace, it's because we have forgotten that we belong to each other." Boyle's book *Tattoos on the Heart: The Power of Boundless Compassion* had a profound influence on Prodigy's founders, and we have since deepened our study of Homeboy's work over the past 30 years.

Building our culture at Prodigy is a simple journey. We don't have a list of organizational values we teach. We don't outline dos and don'ts for how to act. We introduce one concept to apprentices on day 1: spiritual hospitality. This concept is what we strive to embody, and it drives our actions, words, and intentions. Although Prodigy is not a religious organization, we have embraced this idea described by theologian Henri Nouwen in his book *Reaching Out: The Three Movements of the Spiritual Life*.

“Hospitality means primarily the creation of a free space where the stranger can enter and become a friend instead of an enemy.” Hospitality is not to change people, but to offer them space where change can take place. It is not to bring men and women over to our side, but to offer freedom not disturbed by dividing lines. It is not to lead our neighbor into a corner where there are no alternatives left, but to open a wide spectrum of options for choice and commitment. It is not an educated intimidation with books, good stories and good works, but the liberation of fearful hearts so that words can find roots and bear ample fruit. It is not a method of making our God and our way into the criteria of happiness, but the opening of an opportunity to others to find their God and their way. The paradox of hospitality is that it wants to create emptiness, not a fearful emptiness, but a friendly emptiness where strangers can enter and discover themselves as created free; free to sing their own songs, speak their own languages, dance their own dances; free also to leave and follow their own vocations. Hospitality is not a subtle invitation to adopt the lifestyle of the host, but the gift of a chance for the guest to find his own.

At Prodigy, we describe spiritual hospitality in this way: “We create space for people to be authentically and fully themselves.” When we introduce this concept on day 1, across the board, apprentices resonate deeply with this idea that teaches this: I, in my authentic self, matter. And you, in your authentic self, matter equally. Our goal is to create an environment for each other and for customers that embodies this.

“How would you greet this customer?” I ask the eight new apprentices during their first professional development at Prodigy Coffeehouse. On the screen is a picture of an elderly woman wearing a cat sweater covered in cat hair. She's holding an orange tabby cat. The apprentices consider for a moment. Julian, a young man who tells us he was raised “between the trap house and the church house” considers this customer. He rubs his face, takes a breath, and articulates his greeting: “Good morning, ma'am. Now who do we have here? Would she like a dish of steamed milk?”

We celebrate Dre's suggestion. Other apprentices offer conversation starters about their own cats or suggest she choose the sunny table in the corner because “cats love sunshine.” We move on to other customer prototypes: a businessman with a briefcase, a mom with kids hanging off her hips, a lady from the suburbs, an elderly man with a cigar in his front lapel.

Two young black men from the neighborhood, Jalen and DeAndre, walked into Prodigy Coffeehouse in summer 2018. Michael, an apprentice on shift that day, treated these strangers to his genuine, loving welcome. We don't remember Michael's exact words and can't reduce it to a science, but somewhere between being pumped full of the best hot chocolate they had ever had (their words), DeAndre and Jalen experienced spiritual hospitality. That day, they applied to be apprentices. When asked why they were drawn to Prodigy's craft coffee apprenticeship, both pointed to Michael's welcome

the first time they set foot in the shop. They felt they belonged. They found a place where they can be fully and authentically themselves. Who they are and what they have to offer is recognized for being enough. Because, well, it is.



We intentionally *do not* use the term “customer service.” Apprentices are not here to serve people. The traditional way our country views customer service, where the customer, the one with the money, is always right, and the worker is here to serve them is not aligned with our culture. Instead we flip this concept. Rather, we talk about customer *experience* and view it as an opportunity for empowerment. Apprentices embrace the idea that they have the power, behind the counter, to affect people. They have the power to create a work environment and customer experience where people feel honored, valued, and cared for. In a recent preapprenticeship training, they developed their own customer experience vision statement: “At Prodigy, we want you to feel special, as if you are surrounded by seahorses, and butterflies land on your nose.”

In addition to informing customer experience, spiritual hospitality extends to how we treat employment and education in the apprenticeship.

Spiritual hospitality is the difference between a supportive work environment and a transformational work experience for everyone involved. Like many nonprofits, we begin by extending it in our outreach methods. Who you are and what you bring to the table is enough. Do you have

previous experience in one of the country's fastest-growing craft coffee scenes? Do you have previous experience in hospitality? Do you have a clean record? Do you have a diploma? None of that is needed.

Do you have a willingness to learn and grow? Do you value yourself and others? Are you willing to throw around terms like “authenticity” and “love”? Do you understand that you have power to affect others? Are you ready to jump headfirst into something new, maybe foreign, and exciting? Are you ready to take yourself and your future possibilities seriously? Now you're talking.

What happens quickly and consistently is that apprentices begin to return the same spiritual hospitality to one another.

Veteran apprentices welcome, teach, mentor, and guide “newbies” into the world of craft coffee and self-exploration. Our team maps out learning trajectories specific to each apprentice focused on mastering shift responsibilities, the craft of coffee, and personal growth. Learning and support are adjusted and sometimes readjusted based on needs and challenges apprentices may be facing in and out of work. Individual check-ins and debriefs are the norm. Group professional development sessions, shadow opportunities, and leadership mind-set acquisition supplement all the other intentional work leading to deep learning and growth at an accelerated pace.

Expectations are high. Support is always present. Sweep and mop your best. Use the power within you to connect with others, customers, and teammates alike. Engage in your craft. Terms we throw around to solidify our culture include “taking learning into your own hands,” “every shift counts,” and “have an ‘I got you’ mentality.” With all these things happening, apprentices become strong, confident young professionals ready to share their considerable gifts that have been there all along.

Challenges and Wisdom

One of our biggest challenges in this work is to build the right model with the right team of professionals and full organizational buy-in. Resources and integration are required for both the business and social impact sides to achieve excellence. It takes developing a team with a specific set of professionals who are cross-trained to work within a model that naturally lends itself toward tension: between business and mission or education.

Excellence in business and excellence in education (or mission) are integral and equally important. Success of an apprenticeship program relies on high-quality execution on the educational side and equally high expectations on the business side. The two are interdependent. Too many times, we sacrifice one for the other. We start an apprenticeship program with people who know the subject area (the craftsmen), but they aren't skilled in teaching, training, relationship building, or cultural competency. Or vice versa: the big-hearted, passionate people-person starts a program but doesn't

know the subject area in depth, and apprentices don't have access to the true craft and depth of knowledge needed for mastery.

In Prodigy's case, we started with a founder and founding team with missional expertise. Our first hire, even before the executive director was on payroll, was a coffee craftsman (a start-up consultant who became our first-year operations manager). This was the best use of our limited funding we could have made at the time. Even today, even though missional impact is our primary purpose, our operations manager represents and advocates for the business case and best practices for business decisionmaking. And it is his role to teach apprentices his thought processes, not only in craft coffee but in operations and business development.

The additional challenge in this work is to sustain equal business, educational, and cultural excellence throughout organizational growth and with personnel changes.

What's Next

Prodigy has a vision for the workforce. It is a new generation of healthy, innovative workers who are transformational leaders—young people cocreating an economically thriving and equitable country. To do this, we are creating an apprenticeship model that can inspire and support apprenticeship in all workplaces.

For our part, Prodigy is taking a slow-scale approach to deepening and broadening impact over the next five years. We are developing a road map in three key areas:

1. **Deepen leadership development.** The first is expanding our apprenticeship training to include new pathways for apprentice graduates within and beyond Prodigy. Our first internal pathway is that of manager development. This is a salaried two-to-three-year leadership, operations, and craft coffeehouse training program. The goal is for apprentices to one day open, operate, and own a highly successful coffeehouse. This takes community wealth building full circle and creates a development pathway for apprentices into leadership roles at Prodigy Ventures. Additional leadership or apprenticeship pathways include a pathway for a case manager or navigator, a community engagement coordinator, a roaster, or an equipment technician.
2. **Expand operations.** In the coming year, we plan to open a second craft coffeehouse, learning lab, and roastery. Once we secure a second location, we plan to build a state-of-the-art learning lab, work toward earning "trainer status" from the Specialty Coffee Association, and increase numbers in our apprentice manager training program. An additional coffee shop and roastery will increase leadership and entrepreneurship experience for apprentices, increase the number of apprenticeship opportunities, diversify technical skill offerings, and increase organizational efficiency and vertical integration. We have explored five opportunities to expand and passed

on each for various reasons. We were recently contacted by the Adams County Board of Commissioners, who requested to use our apprenticeship model, and we are exploring this opportunity. We hope to open up to 5 coffeehouses over the next 5 to 10 years.

3. **Broaden reach.** The third area of scale will be to create a consulting enterprise. More than 50 organizations have sought our advice on how to replicate this model, and we have presented at multiple national venues. Because of limited capacity, we cannot adequately support organizations. Consulting will allow Prodigy to share our core competencies of youth engagement, apprenticeship, and creating cultures of healing with other social enterprises and businesses. We plan to create a business model for this in 2019.

Stephanie Frances, founder and executive director of Prodigy Ventures, brings 12 years of experience in youth career development. Her expertise lies in activating youth talent and creating dynamic cultures that engage youth in their intrinsic motivation to learn. She has led Prodigy's enterprise to double-digit year-over-year sales growth and such accolades as the best new coffeehouse in Denver, and its apprenticeship model for disconnected youth has an 85 percent completion rate. Frances recently represented Prodigy at the Global Homeboy Network Gathering, the Aspen Institute's Opportunity Youth Forum, and the National Youth Employment Coalition. Frances holds a master's degree in nonprofit management from Regis University and was a Denver Business Journal 2018 Outstanding Women in Business finalist.

Charmaine Trades In a Supermarket Job for a High-Tech Career Opportunity

Lisa Yates

A keen learner who enjoys a combination of mental stimulation and practical activities, Charmaine Thorogood-Hawkins has always wanted to pursue a career in the trades.

In high school, she completed a certificate in electrotechnology through the Victorian Certificate of Applied Learning, which involved work experience. After graduating in 2015, she set out to find a full-time apprenticeship.

Charmaine lived in a small community on the Mornington Peninsula in southeastern Australia, and the apprenticeship search proved more difficult than she expected.

“I didn’t have much luck. The local Sparkys didn’t have much going; most people got apprenticeships because they already knew someone in the industry,” she says.

While she was looking for opportunities, Charmaine worked in a local supermarket.

In 2018, she decided to apply for apprenticeships outside her area. She was willing to move as far away as Western Australia.

“I wanted to get my career off the ground,” Charmaine says. “I didn’t want to be stuck working in a supermarket.”

In 2018, she applied for a WPC Group dual-trade (electrical and instrumentation) mentored apprenticeship with Esso Australia, the Australian affiliate of ExxonMobil.

“The WPC Group support was really good. There was good communication throughout the recruitment stage. I felt like they had my back and wanted me to get the job,” Charmaine says.

She impressed WPC Group and Esso during the interview process, and in January 2019, 21-year-old Charmaine began her career.

“I felt so grateful to be offered the apprenticeship. I felt like I’d finally landed on my feet,” Charmaine says.

And she didn’t have to move. In fact, she travels only 30 minutes to get to her workplace in Hastings.

“I feel really lucky that the Long Island Point plant is in my backyard—it’s ideal,” Charmaine says.



Photo courtesy of the author.

Charmaine completed five weeks of classroom-based training before starting in the plant and meeting the tradespeople. She says this experience was a great opportunity to build relationships with the other operators and apprentices who started at the same time as she did.

“It was really good to build that bond and have familiar faces around,” she says.

Coming into the plant, Charmaine was unsure what to expect. Her nervousness disappeared as she got to know her team.

“The tradespeople have been really good. They are enthusiastic, happy to have us around, teach us new skills, and encourage us.”

Charmaine is enjoying gaining new knowledge about her trade and the oil and gas industry.

“The best part so far has been the new learning opportunities. Learning about all the processes in the industry is interesting, and there is always more to learn.”

And Charmaine has more learning opportunities to look forward to. Her apprenticeship involves four years of electrical work, followed by one year of instrumentation. Throughout this time, she has an Esso mentor and a WPC Group mentor to help her become the best she can be in her trade.

After completing her apprenticeship, Charmaine hopes to continue working within the industry and undertake further training to broaden her knowledge.

“This apprenticeship will open so many doors for me,” Charmaine says.

About Esso and WPC Group

Esso and WPC Group entered a partnership in 2018 with a shared passion and commitment to provide young people with leading employment opportunities in their community.

Since the first intake of 16 apprentices in April 2018, the program has expanded to 32 apprentices and trainees across various departments.

Lisa Yates is director of programs and partnerships for IWSI America and coauthor of *It's Time: Using Modern Apprenticeship to Reskill America*. Yates has worked in the public, private, and nonprofit sectors in workforce development, affordable housing, community banking, and education.

Work-Based Mentoring Programs for Youth

Matthew Hagler and Jean Rhodes

Work-based mentoring programs have received little research attention compared with other types of youth mentoring programs (e.g., based in schools or in the community) and other types of work-based educational programs (e.g., apprenticeships or internships without formal mentoring components). This chapter provides an overview of the literature—as it pertains to the effectiveness, processes, and program models of workplace mentoring—and provides recommendations for future directions.

Background and Rationale for Workplace Mentoring

Adolescence and young adulthood are fraught with many challenges and transitions, particularly related to academic and career development. Educational and vocational experiences during this developmental period affect long-term economic success, but many youth lack the guidance, preparation, opportunities, and resources they need to succeed in higher education or skilled labor markets (Vazsonyi and Snider 2008; Vuolo, Mortimer, and Staff 2016). Following the Great Recession of 2008, the youth disconnection rate (i.e., the share of 16-to-24-year-olds who were neither working for pay nor in school) reached an all-time high of 14.7 percent. It has since recovered but remains above 10 percent, more than double the disconnection rates of any other age group. Youth from low socioeconomic backgrounds, who are racial or ethnic minorities, or who have a disability are disproportionately more likely to be disconnected (Lewis 2019). Although a lack of jobs is commonly cited as the leading cause of youth unemployment, recent labor market surveys suggest that youth unemployment rates have not fallen in proportion to expanding job openings, and some companies are struggling to fill middle-skill positions (Holzer 2015).¹ Rather, many scholars have highlighted the lack of vocational training and career development in the American educational system as a key contributor to the disconnection between youth and the labor market (Hamilton and Hamilton 2004; Lewis 2019; Newman and Winston 2016). In response, researchers and policymakers have devoted increasing attention to and investment in work-based educational programs such as vocational education and apprenticeships, which seek to better integrate educational and vocational experience to help youth transition into the labor market.

As the research base on work-based learning has expanded, studies have consistently documented adult-youth relationships as key ingredients to promoting positive youth outcomes (Bempechat et al. 2014; Bennett 2007; Kenny et al. 2015; Kenny et al. 2010). Although most adolescents work part time while in high school, the impact of work experiences on youth development varies based on the quality

of these experiences. In particular, part-time work experiences that involve a high degree of mentoring are the most strongly associated with positive academic and psychosocial outcomes (Staff, Mortimer, and Uggen 2004). Similarly, Bennett (2007) examined youth participating in a work-based internship program and found that identifying a one-to-one mentoring relationship at their worksite was the strongest predictor of occupational engagement, beyond even program participation and amount of supervisor contact and feedback. Yet, only about 40 percent of youth in this study formed mentoring relationships at their job sites (the program “strongly encouraged” one-on-one mentoring relationships but did not implement formal mentoring structures). Similarly, in nationally representative samples, only a small minority of youth identify employers or coworkers as mentors, even after controlling for employment (Erickson, McDonald, and Elder 2009; Hagler and Rhodes 2018). Despite adult-youth contact in workplaces, true mentoring relationships (i.e., those characterized by intentional, personalized instruction and guidance) do not always form without formal structures of matching, supervision, and accountability. These findings provide a strong rationale for developing and implementing formal work-based mentoring programs.

Do Work-Based Mentoring Programs Work?

Formal work-based mentoring programs are distinct from other youth mentoring programs in that mentoring activities occur primarily in the workplace (rather than in schools or in the community), and they are distinct from other work-based learning programs in that they formally match youth with employees who are charged with providing ongoing, personalized mentoring. Work-based mentoring programs have significantly expanded during the 21st century, but we know surprisingly little about how much they promote positive youth outcomes. In a recent review of studies on workplace mentoring programs, only half were published in peer-reviewed journals, and a quarter were evaluations of traditional mentoring programs that happened to be in a work setting (MENTOR 2019b). Rather, a significant proportion of reports on formal work-based mentoring are conducted and published internally by program staff, use small samples without comparison groups, or exclusively present subjective, qualitative findings. With these limitations in mind, we will review what is known about the efficacy of these programs.

The Benefits of Work-Based Mentoring Programs for Youth

Some of the most rigorous evaluations of workplace mentoring programs were conducted by organizational psychologist Frank Linnehan nearly 20 years ago. In one study, Linnehan (2001) drew on a sample of 202 African American students from urban high schools in Philadelphia who expressed interest in a work-based mentoring program and compared educational outcomes of the 68 students who were assigned to a mentor with the outcomes of the 134 students who were placed on a waiting

list. Although there were no overall differences in outcomes between those who participated in mentoring and those on the waiting list, those who participated in work-based mentoring for more than half the academic year had higher grade point averages (GPAs) and attendance rates than those on the waiting list compared with the those on the waiting list, after controlling for previous-year GPA and attendance. These findings are consistent with findings from other formal mentoring programs (e.g., based in schools or in the community), which have found that the impact of mentoring is dose-dependent, such that longer-lasting relationships and program participation tend to be more beneficial (Grossman et al. 2012; Grossman and Rhodes 2002).

Using the same sample, Linnehan (2003) conducted a follow-up study comparing outcomes for four groups of students: students who participated in the formal work-based mentoring program, students who worked during the year and had an informal mentor at work, students who worked but did not have a formal or informal mentor, and students who did not work during the academic year. Despite no baseline differences among these groups, results indicated that students receiving formal mentoring believed more strongly than students without mentoring that school was relevant to work. Among students with a mentor at work (either formal or informal) those who were highly satisfied with their mentors more strongly believed that school was relevant to work. Finally, students with either a formal or an informal mentor had higher self-esteem than those who did not work. Also, just more than half the students who worked outside the mentoring program established mentoring relationships at work. These results suggest that both formal and informal mentoring relationships benefit students, particularly when the relationships are high quality, but that informal relationships often do not form without the structure of formal work-based mentoring programs.

Surprisingly few empirical studies on work-based mentoring have been published since Linnehan's work, and those that have been published are primarily qualitative, lack comparison groups, or focus on informal mentoring relationships (i.e., relationships that were not matched through a program). Vazsonyi and Snider (2008) examined informal work-based mentoring relationships for Swiss apprentices and American high schoolers engaged in part-time work. They found that, in both samples, mentoring relationships characterized by high levels of support and supervision promoted the development of self-esteem and job skills. In a qualitative study, Bempechat and colleagues (2014) investigated Cristo Rey schools, which integrate academic and work-based education, including student participation in work-based internships with formally assigned work-based mentors. In interviews, many students discussed how their work-based mentoring experiences led to greater maturity, personal responsibility, future orientation, and motivation. They also noted that their mentoring relationships made them feel more confident interacting with adults in a professional manner. Similarly, Smith-Ruig (2014) interviewed Australian adolescents participating in a work-based mentoring program, during which participants discussed increased confidence, self-esteem, career focus, and knowledge about their chosen profession as a result of mentoring, as well as employment opportunities following graduation.

Additional support for the benefits of work-based mentoring comes from Shandra and Hogan's (2008) secondary analysis of the National Longitudinal Study of Youth, in which they examined American youth with disabilities and the impact of different work-based educational initiatives (e.g., job shadowing, work-based mentoring, cooperative education, school-sponsored enterprise, technical preparation, and internships) on occupational trajectories. They found that, among these experiences, only internships and mentoring were associated with vocational outcomes during young adulthood. Prior participation in an internship was associated with increased hourly compensation, while prior participation in work-based mentoring was associated with having fringe benefits at work (e.g., paid sick days).

In addition to these studies from peer-reviewed journals, self-published program evaluations of work-based mentoring programs offer additional insights about the benefits of work-based mentoring programs. Many programs have not conducted formal evaluations, but there are exceptions. The Urban Alliance High School Internship Program, a DC-based workplace mentoring program further discussed in the Illustrative Program Profiles section below, recently commissioned an independent program evaluation in which youth were randomly assigned to the mentoring program or a waiting list control group (Theodos et al. 2017). This evaluation found that after one year of participation, youth assigned to the mentoring program had higher perceptions of their college readiness, soft-skill development (i.e., interacting with adult professionals, writing professional emails), and hard-skill development (i.e., filing, faxing, word processing, and managing and making spreadsheets) compared with youth on the waiting list. The evaluation generally did not reveal overall program effects on objective outcomes (e.g., SAT and ACT scores or GPA), but it did find that males in the mentoring program were more likely to graduate from high school than those in the control group.

Overall, this research provides evidence that work-based mentoring benefits academic, psychosocial, and career development, particularly when mentoring relationships are of sufficient length and quality. But the evidence base is limited to a few studies that use comparison groups and even fewer that use a randomized controlled trial. Further, most findings are related to subjective outcomes, such as confidence, self-esteem, and self-perception of skill development, with more limited evidence highlighting objective academic and vocational benefits associated with work-based mentoring.

The Benefits of Workplace Mentoring Programs for Employees and Firms

Most research on work-based mentoring focuses on benefits for mentees, but several researchers and stakeholders have discussed presumed reciprocal benefits for employees and firms. A joint project by the National Mentoring Partnership (MENTOR) and Ernst and Young examined corporations' roles in youth mentoring by interviewing representatives from 18 companies that are highly involved in youth mentoring initiatives (EY and MENTOR 2015). The representatives cited three key reasons companies

engaged in youth mentoring: (1) promoting employee satisfaction, engagement, and retention; (2) recruiting and training future employees; and (3) supporting community development, which, in turn, strengthens their customer bases. Firms believed that investing in mentoring programs benefited their current and future workforces and maintained viable customer bases in proximal communities.

Little empirical research on work-based mentoring for youth directly supports these beliefs, though some relevant evidence comes from related research on work-based mentoring for adults, in which experienced employees mentor early-career employees and recent hires. Ghosh and Reio (2013) analyzed 18 studies that compared employees who were mentors in employee mentoring programs with employees who did not participate. They found that employees who were mentors had greater job satisfaction and organizational commitment. Mentors who provided higher levels of career mentoring experienced greater career success. Those who provided higher levels of psychosocial mentoring had higher organizational commitment, and those who provided more role modeling had stronger job performance. Though promising, findings from this meta-analysis should be interpreted with caution because employee-youth mentoring differs from employee-employee mentoring, and benefits to employers and firms may be more indirect or subjective.

Mechanisms and Processes of Work-Based Mentoring for Youth

In addition to understanding *whether* these program work, it is important to understand *how* they work. Research suggests three broad processes through which work-based mentoring can influence youth development: skill development, social networking and advocacy, and enhanced self-concept (Rhodes 2003).

Skill development. Perhaps the most widely discussed process of work-based mentoring is the development of skills youth need to succeed in the workplace. Through in-depth qualitative research, Hamilton and Hamilton (2003) identified three primary domains of skills youth learn through mentoring: technical skills, social skills, and personal skills. Technical skills, or “hard skills,” are directly related to doing the job at hand. The specifics of these skills vary across jobs, but they generally relate to meeting productivity, organizational, and safety standards (Hamilton and Hamilton 2003; Theodos et al. 2017). Studies have shown that work-based mentors teach youth technical, job-related skills through direct modeling and demonstration, assigning progressively more challenging job-related tasks, verbalizing expectations, monitoring and supervising progress, and providing constructive feedback (Hamilton and Hamilton 2003; Kenny et al. 2015; Smith-Ruig 2014).

Process studies of work-based mentoring suggest that professional development goes beyond cultivating workplace-specific skills, emphasizing social and personal competencies that can translate to almost any professional setting (Hamilton and Hamilton 2003; Kenny et al. 2015). These “soft skills” include teaching youth how to communicate in the workplace (e.g., in person, over the phone, or by email), how to act responsibly (e.g., meeting deadlines, taking initiative, or asking for help), and instilling

ambition and drive for ongoing learning opportunities. Developing these skills, although seemingly less tangible, appears to involve instructional techniques similar to those for developing technical skills, including direct modeling, discussion of expectations, supervision, and feedback. In qualitative interviews, youth and mentors alike emphasize the importance of high-quality mentors teaching these skills to youth and not taking them for granted or expecting youth to enter programs with them intact (Bempechat et al. 2014; Kenny et al. 2015; Smith-Ruig 2014).

Social networking and advocacy. Many work-based mentoring programs target youth from low-income backgrounds. Work-based mentors can be important sources of social capital by advocating for youth and expanding their social and professional networks. This advocacy and networking support might include making youth aware of future job opportunities, writing letters of recommendation, and introducing youth to colleagues and acquaintances (Hamilton and Hamilton 2003; Kenny et al. 2015; Smith-Ruig 2014). Coupled with the development of soft skills, such as professional communication, this advocacy and networking support can result in tangible job opportunities for youth beyond their participation in the mentoring program.

Enhanced self-concept. Although professional and structured, high-quality work-based mentoring relationships are characterized by genuine caring and emotional investment, modeled by the mentor and reciprocated by the mentee (Kenny et al. 2015). Personalized relationships with mentors provide a context for skill development and networking and promotes a positive perception of mentees' current and future selves, which is important for youth from historically marginalized and disadvantaged social groups. In interviews, adolescents who have participated in work-based mentoring programs say that perceived interest and investment from mentors reformulates their understanding of what is possible and attainable for the future, which increases self-esteem, motivation, and ambition (Hamilton and Hamilton 2003; Kenny et al. 2015; Smith-Ruig 2014).

Illustrative Program Profiles

Work-based mentoring has many models and structures. Below, we profile four programs to illustrate different approaches, intensities, considerations, and potential stakeholders or sponsors of work-based mentoring (e.g., nonprofits, governments, private educational organizations, and corporations).

Urban Alliance

Urban Alliance is a DC-based nonprofit internship program that engages at-risk youth from surrounding communities in training, mentoring, and work experience. Students are recruited as high school juniors and participate in yearlong internships with a partnering company, nonprofit, or government agency during their senior year (part time during the school year and full time during the summer). These

internships are paid, starting around minimum wage with the potential for raises. Youth receive pre-job training and ongoing support from an assigned program coordinator, and they are assigned to a work-based mentor, an employee of the internship site who provides mentoring, training, supervision, and evaluation. Urban Alliance is among the few operating work-based mentoring programs to conduct a formal randomized evaluation, which yielded promising results in increasing mentees' perceptions of college readiness and skill development, as well as increased graduation rates for boys (Theodos et al. 2017).

The New York City Mentoring Program

The New York City Mentoring Program is a municipal initiative of the New York City Department of Education, continuously operating since 1983. With sites in more than 29 high schools, the program matches 600 students a year with adult mentors from more than 25 businesses, organizations, and member organizations. A coordinator at each school facilitates program operations by identifying student participants and working with partnering organizations to make mentoring matches. Mentors are expected to meet with students for at least one hour a week for one year, typically after school at their workplace. Mentors are expected to expose youth to the working world, provide academic and career advice, and connect them with the city's cultural and social resources through field trips and special events. The program has not been formally evaluated with a comparison group but reports that more than 90 percent of participating youth graduate from high school and attend college, higher than the city average (New York City Department of Education 2018).

Cristo Rey Schools

Cristo Rey schools are a network of 35 Jesuit-run Catholic schools operating in 22 states. Cristo Rey schools are locally owned and operated, but each follows a model of work-based education originally developed in Chicago. Schools integrate four years of college preparatory academics with professional work experiences. The school week is structured so each student spends four days a week at school and one full day at internship sites with partnering companies, nonprofits, and government agencies, who in return cover the majority of students' tuition costs. Collectively, four students (one from each class year who go to the worksite on different days) share the job responsibilities of an entry-level employee. Students receive support from their teachers, who are familiar with their work placements, and from their work-based mentors assigned at internship sites. Though the Society of Jesuits operates the schools, almost half of participating youth are not Catholic. Cristo Rey schools have not been formally evaluated, but qualitative investigations suggest that program participation increases young people's sense of integration between academics and work, future orientation and self-esteem, and perceived readiness to function in the working world (Bempechat et al. 2014).

Succeed Through Service

The Ritz-Carlton's Succeed Through Service program is a corporate-sponsored work-based mentoring program. In partnership with the nonprofit America's Promise Alliance, the Ritz-Carlton connects low-income youth with mentors across various professions within the hospitality industry (e.g., chefs, event planners, maintenance and cleaning staff, and managers) to facilitate career exploration, develop job and life skills, and encourage civic engagement. In addition to direct job shadowing and apprenticeship, the program offers curriculum-based educational modules on such topics as social skills and etiquette, teamwork, public speaking, application and interview skills, and healthy eating. Youth and their mentors also develop and carry out service projects, often focused on improving the communities the mentees come from. The program has served more than 15,000 students and has released an open-source toolkit for replicating the program model (Succeed Through Service 2013).

Recommendations and Future Directions

Work-based youth mentoring is a promising avenue for improving educational and vocational outcomes for disadvantaged youth. Below are recommendations for research and practice to improve program rigor and reach.

Recommendations for Work-Based Mentoring Research

As in other areas of youth mentoring, program expansion of work-based mentoring has outpaced research and evaluations. Many programs yield promising outcomes for participating youth in terms of graduation and employment rates, but most of these programs lack a comparison group, and positive outcomes cannot necessarily be attributed to program participation rather than other factors, such as self-selection. Youth who naturally seek out work-based mentoring programs might be dispositionally ambitious and conscientious, contributing to positive outcomes. Only program evaluations that incorporate comparison groups can rule out confounding explanations.

There is a need for formal program evaluations of work-based mentoring programs. The gold standard of program evaluations is the randomized controlled trial, in which youth would be randomly assigned to participate in either a work-based mentoring program or a comparison group (i.e., they are placed on a program waiting list or given "treatment as usual"). Comparisons between these groups, which are presumably equivalent in terms of demographics and baseline functioning because of random assignment, can then be conducted to evaluate the program's effects on participating youth.

When randomization is not feasible, quasi-experimental designs would still be useful in evaluating work-based mentoring programs. In this case, evaluators compare the outcomes of youth who participate in programs with outcomes for a naturally occurring comparison group that is roughly

equivalent in terms of demographics and baseline functioning but do not have access to the program (e.g., youth in comparable school districts, communities, or cohorts). If rough baseline equivalence between groups is established and researchers statistically control for outstanding group differences, quasi-experimental evaluations can provide vital information about program impacts (Linnehan 2001, 2003). In both randomized controlled trials and quasi-experimental studies, moderator analyses can be conducted among participating youth to better understand the factors that enhance or undermine program effects, such as length of participation, mentoring relationship quality, and mentor and youth characteristics.

Recommendations for Work-Based Mentoring

Although more research is needed, process- and outcome-oriented research on work-based mentoring suggests several best practices to optimally serve youth. First, firms and mentors should be invested in mentees' development. Programs should prioritize recruiting employees who are genuinely interested in mentoring (EY and MENTOR 2015; MENTOR 2019a). This involves emphasizing youth development and benefits in recruitment materials and cultivating a general culture of mentorship across other aspects of the program or company (e.g., employee development programs, employee-employee mentoring), and mid-to-senior-level leadership should demonstrate a commitment to mentoring through program participation (EY and MENTOR 2015; MENTOR 2019a). Mentors (and youth) should be expected to make a long-term commitment to complete the program in its intended duration because long-term matches are generally associated with better outcomes, and premature match termination can be harmful for vulnerable youth (Grossman et al. 2012; Grossman and Rhodes 2002). Following recruitment, mentors should be further trained, supervised, and oriented toward mentoring goals throughout the program's duration (Hamilton and Hamilton 2003; MENTOR 2019a). Even well-intentioned employees might not be strong mentors without consistent instruction and supervision from experienced mentors or program staff.

While participating in the program, young people's activities and responsibilities should be scaffolded so they are challenged but adequately supported by mentors and set up for success. Studies suggest that involving youth in long-term, multistage projects, rather than one-off administrative tasks, allows them to integrate multiple skill sets, work in a team, and learn about multiple workplace issues (Hamilton and Hamilton 2003). Mentors can facilitate learning through multiple techniques, including direct instruction and demonstration, as well as applied methods such as collaboration, supervision, observation, and feedback (Bennett 2007). Finally, work-based mentoring need not narrowly focus on work-related issues. Several studies suggest the most beneficial programs collaborate with schools or are directly integrated with schools, allowing mentors to reinforce the importance of education and draw connections between academic-based education and work-related issues (Bempechat et al. 2014; Bennett 2007; Kenny et al. 2015).

Summary and Conclusions

Work-based mentoring programs improve educational and vocational outcomes for youth by matching them with mentors, with whom they meet regularly, at worksites rather than in schools or communities to facilitate career exploration and experience, develop skills, and cultivate relationships with caring adults. Work-based mentoring may also benefit employees and firms by increasing employee engagement and improving corporate-community relationships. Work-based mentoring, like other forms of youth mentoring, has rapidly expanded, and several program models have been developed by governmental, educational, nonprofit, and corporate stakeholders. Some work-based mentoring programs have found positive program effects for participating youth, but rigorous research and program evaluations are lacking. With more research to inform practice and program development, workplace mentoring offers a promising intervention to improve youth development and economic equity.

Note

- ¹ Bureau of Labor Statistics, “Job Openings and Labor Turnover—March 2019,” news release, May 7, 2019, https://www.bls.gov/news.release/archives/jolts_05072019.pdf.

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Culinary and Pastry Arts Is Serious Business in Lebanon, Pennsylvania

Brian Pheffley and Justin Weaber

Lebanon County Career and Technology Center (LCCTC) provides high school and adult students pathways to solid careers, postsecondary education, and new or advanced employment opportunities. LCCTC recently launched its two-year apprenticeship program in culinary and pastry arts. LCCTC's famous Hilltop Café and Pastry Shoppe is the perfect breeding ground, as are the surrounding Hershey Entertainment and Resorts facilities.

Unlike other registered apprenticeship programs, LCCTC's program costs \$11,000 over two years (including consumables, instructors' salaries, and supplemental online training). For those with financial challenges, Hershey's tuition reimbursement program covers most of the cost. Many apprentices also find scholarship opportunities through industry organizations such as the Pennsylvania Restaurant and Lodging Association.

LCCTC's program enrolls 18-to-22-year-old high school graduates (must be at least 18 to apply, but there is no age limit) and consists of 445 hours of related technical instruction and 4,000 hours of on-the-job training. Because the program was launched in 2017, no one has yet completed the program. But a second cohort kicked off in September 2018. Justin Weaber, LCCTC's adult education coordinator, says the impetus for the program comes from the high regional demand for culinary-trained workers in an area dense with entertainment and vacation destinations. Hershey, the program's major employer, is pleased with program outcomes. The company says 100 percent of its apprentices will be employed upon graduation.

Jarrold Eltz, who has worked at the Hotel Hershey, Hershey Country Club, and Hershey Lodge as an apprentice, recently reflected on his experience at LCCTC. Jarrod is in LCCTC's inaugural apprenticeship class. This past year, he was also Student Chef of the Year for American Culinary Federation's Harrisburg Chapter 181 and finished third in ACF's Northeast Region competition.

Since childhood, Jarrod enjoyed cooking and baking with his mom. For several years in his youth, he was a shadow in various kitchens, culminating in participation in LCCTC's secondary culinary and pastry program his senior year of high school. He developed significant "charisma and confidence in the kitchen." After high school, this experience turned into a job at the Hotel Hershey until Jarrod's apprenticeship started a few months later. After learning that three Hershey properties would be involved in crafting the program, Jarrod says, "It was a no-brainer to pass on the standard college education and degree and pursue hands-on working knowledge with certifications through the American Culinary Federation¹" even though conventional thinkers would have insisted on college after

high school for a student who missed valedictorian by only a hair. But Jarrod is independent minded and trusted himself to identify the best career path for his interests.



Photo courtesy of the authors.

Apprenticeship has facilitated personal and professional changes in Jarrod's life. In pondering personal development associated with his apprenticeship experience at LCCTC, Jarrod remarked, "Before my senior year, even before cooking in general, I was shy and reserved. Working in kitchens and applying my skills have allowed me to break out of my shell and establish new personal relationships along with successfully maneuvering my way through pressured situations like competitions and managing events." As for professional development, "I never planned on being a chef so young," he said, "but my goals shifted to becoming a sous chef by 25 because I have put in time, achieved certifications, placed and won regional and national culinary competitions, and have a mentor in Georgia who wants to lead me down that path." Jarrod is even considering a career trajectory into an executive role with additional certifications.

Several studies and surveys over the past couple of years highlight college students' feelings of unpreparedness for the workforce on many levels, and on the other side of the coin, employers are

frustrated with the challenges of finding skilled talent for their workforce. Both soft and hard skills are equal parts of the equation for students and employers. This is not the case for apprentices who complete their programs highly competent in an industry and who are self-confident and enlightened on navigating the workplace.

When LCCTC's Justin Weaber was asked about his strongest selling points in engaging potential employer partners, he highlighted regional labor statistics, the highly trained and high-quality nature of the program's students, the caliber of the award-winning instructors, the decrease in recruitment costs the program affords employer partners, and employer and employee satisfaction.

Note

¹ The American Culinary Federation's certification is the benchmark of culinary excellence in its industry.

Brian Pheffley, former executive pastry chef at Hotel Hershey, is the pastry chef instructor at Lebanon County Career and Technology Center. He is responsible for all American Culinary Federation Education Foundation's secondary certified programs in the northeastern United States.

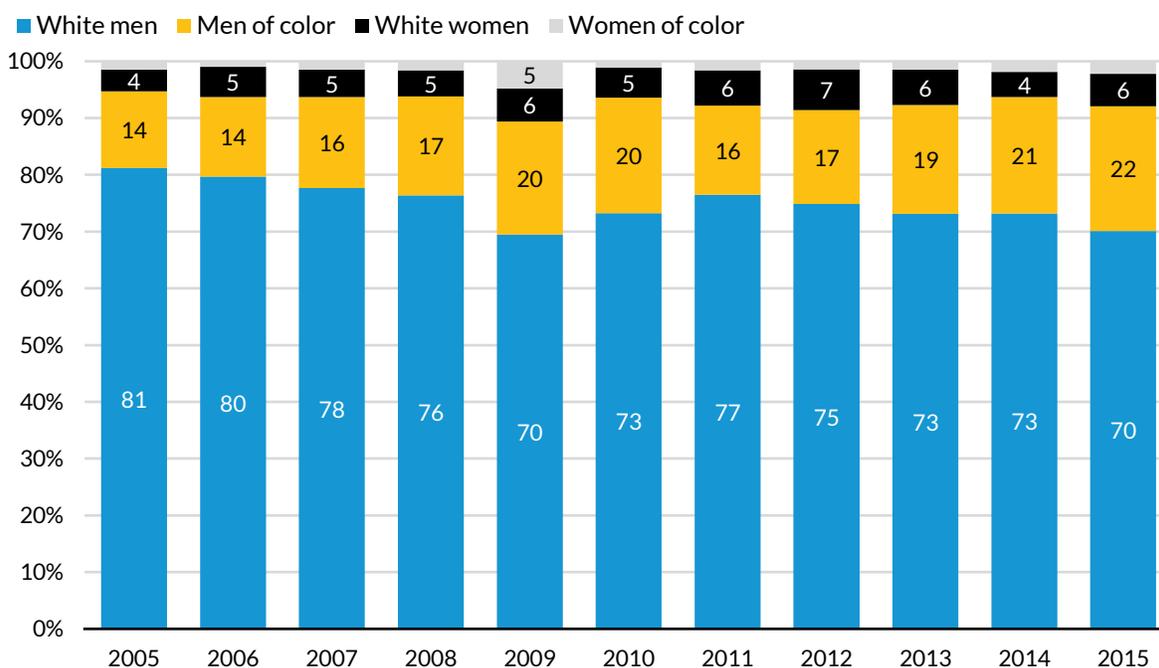
Justin Weaber is the adult education coordinator at the Lebanon County Career and Technology Center. He is responsible for developing and administering intergenerational programs, accredited adult-only courses, and customized industry training for businesses.

Evaluating Preapprenticeships in the Construction Trades in Oregon

Maura Kelly, Lindsey Wilkinson, and Luis Nuñez

White men have historically dominated the highway construction trades in Oregon, but this trend is changing. Of new apprentices in the highway construction trades in 2015, 70 percent were white men, down from 81 percent in 2005 (figure 1). Oregon public agencies, contractors, and nonprofit advocacy organizations have been working on various initiatives to recruit and retain apprentices, with a focus on diversifying Oregon’s construction workforce (Wilkinson and Kelly 2018; Worksystems et al. 2018).

FIGURE 1
New Apprentices in Oregon Heavy Highway Construction Trades, by Race and Gender, 2005–2015 Cohorts



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

These efforts include supporting preapprenticeship programs, which help people develop the necessary skills to meet the minimum entry qualifications to enter a construction apprenticeship program. Preapprenticeship programs also offer ongoing mentoring and support for graduates, through apprenticeship and beyond. Preapprenticeships serve people who cannot access traditional pathways into the trades. They serve women, people of color, people with a criminal justice background, and those

without family or friends in the trades (a common pathway into employment in this sector). Research has found that preapprenticeship programs can increase the recruitment and retention of diverse workers into the construction trades (Martin and Smith 2011; Worthen and Haynes 2003, 2009).

The two Oregon preapprenticeship programs included in this evaluation are Oregon Tradeswomen, which serves women through a seven-week program, and Constructing Hope, which primarily serves people of color and those previously incarcerated through a nine-week program. Oregon Tradeswomen and Constructing Hope serve the most students, but there are other registered preapprenticeship programs in Oregon, including those focusing on specific trades.¹ Oregon Tradeswomen and Constructing Hope provide students the knowledge and skills they need to enter into an apprenticeship, including construction math, green building, jobsite safety, tool skills, and construction culture. Programs include classroom training and visits to apprenticeship training centers and active construction sites. Both programs provide career counseling, help students apply to apprenticeships, and provide financial and social support. Funding for these programs comes from foundations, industry, and individual donors. These programs are also supported by the Oregon Department of Transportation (ODOT) and the Bureau of Labor Industries (BOLI) Highway Construction Workforce Development Program, which is an initiative to diversify the skilled highway construction workforce by increasing the recruitment and retention of diverse workers.²

This chapter assesses how preapprenticeship programs prepare people for entry into the trades, the impact of preapprenticeships on the recruitment of women and people of color into apprenticeships, and how financial and social support (provided by preapprenticeships and other organizations) increase the retention of women and apprentices of color through to apprenticeship completion.

Our Approach to Evaluating Preapprenticeship Programs in Oregon

To assess how preapprenticeship programs affect the skills, perceptions, and career outcomes of women and people of color, Portland State University researchers designed a longitudinal study of people participating in Oregon Tradeswomen and Constructing Hope. We developed the surveys in collaboration with Oregon Tradeswomen and Constructing Hope staff members. We also relied on data from the Oregon Apprenticeship System (OAS) database to identify program graduates who entered a registered apprenticeship. The evaluation was conducted in a collaboration between Portland State University, Oregon Tradeswomen, Constructing Hope, BOLI, and ODOT.

This evaluation focuses on two cohorts of preapprenticeship students at Oregon Tradeswomen and two cohorts at Constructing Hope. We collected data in 2016 and 2017. For each cohort, we

administered the study's first wave of the survey on the first day of the preapprenticeship class, the second wave at the end of the preapprenticeship class, and the third wave one year later. We supplemented survey data with data collected through BOLI's Oregon Apprenticeship System, which tracks all registered apprentices in Oregon. Across all four cohorts of preapprenticeship students, 94 completed wave I surveys on the first day of class (of 94 students enrolled), 76 completed the wave II surveys on the last day of class (of the 77 who completed the programs), and 15 completed wave III surveys online or over the phone one year after completing the program.

In our study period, Oregon Tradeswomen students were 100 percent female and 17 percent women of color (staff members reported that the two cohorts in our study had an atypically low number of women of color). Constructing Hope students were 11 percent female and 54 percent people of color. These preapprenticeship programs serve students who have other disadvantages. In our study period, 77 percent of Constructing Hope participants had a criminal record, 28 percent of Constructing Hope participants did not have access to permanent housing, and 64 percent of Constructing Hope participants and 37 percent of Oregon Tradeswomen participants received public assistance.

Preapprenticeship Programs Improved Students' Perceived Strengths in Job-Related Skills

Between the first and second waves, students in both programs reported higher perceptions of their ability on survey items related to tools and skills needed for the construction trades, knowledge about working on construction jobsites, and knowledge about careers in the trades. We assessed participants' perceived strengths in various skills important for success in the construction trades. For the wave I and wave II surveys, we asked participants to evaluate their strengths, on a scale from 1 (very weak) to 4 (very strong), in the following 14 areas:

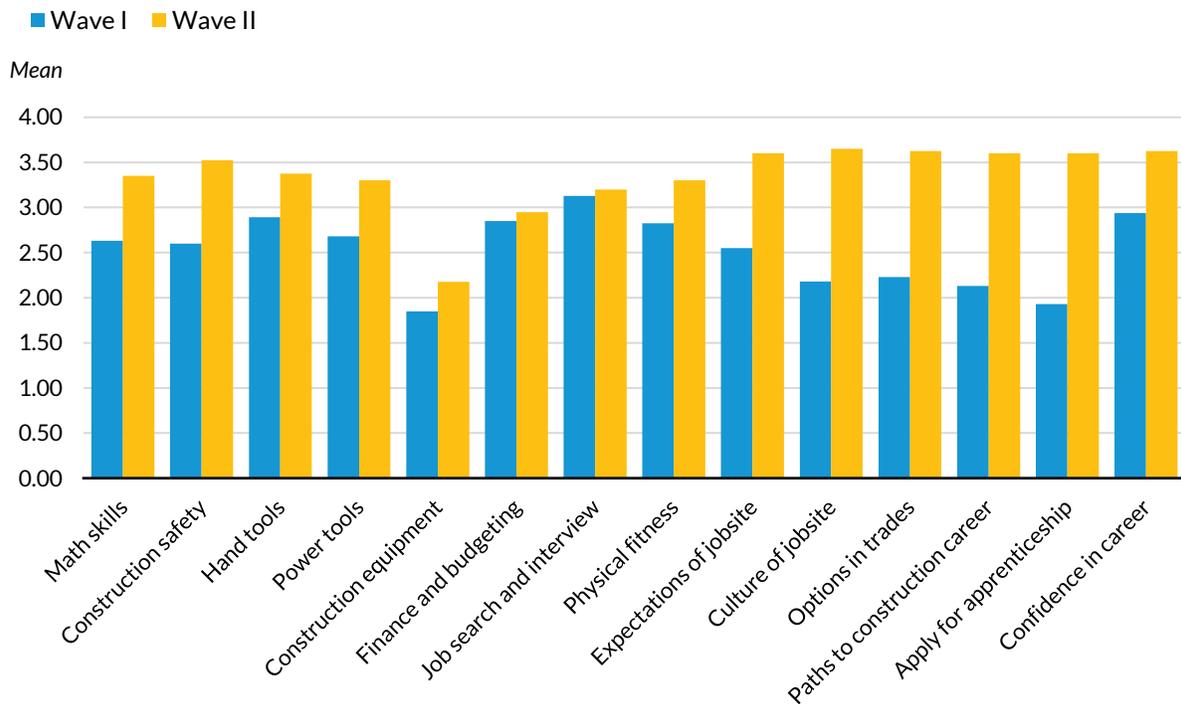
- math
- construction safety
- use of hand tools
- use of power tools
- ability to drive construction equipment
- financial and budgeting skills
- job search and interview skills
- physical fitness
- understanding the expectations for working on jobsites

- knowledge of the culture of construction jobsites
- knowledge of the options for working in the trades
- understanding the pathways in a construction career
- knowledge of how to apply for an apprenticeship program
- confidence in starting a career in the trades

We created a scale incorporating all 14 skill items ($\alpha = 0.86$) and examined changes in each item separately for Oregon Tradeswomen and Constructing Hope participants. Combining participants from both programs, perceptions of strength in all skills increased between the first and second waves. Overall, changes in perceptions of strength are statistically significant for all skills except finance and budgeting skills and job interview skills.

For Oregon Tradeswomen participants, increases in perceived skill strength were largest in knowledge of the culture of construction jobsites, knowledge of options for working in the trades, understanding the pathways into a construction career, and knowledge of how to apply for an apprenticeship program. Increases in perceived strength were smallest for financial and budgeting skills and job search and interview skills (figure 2).

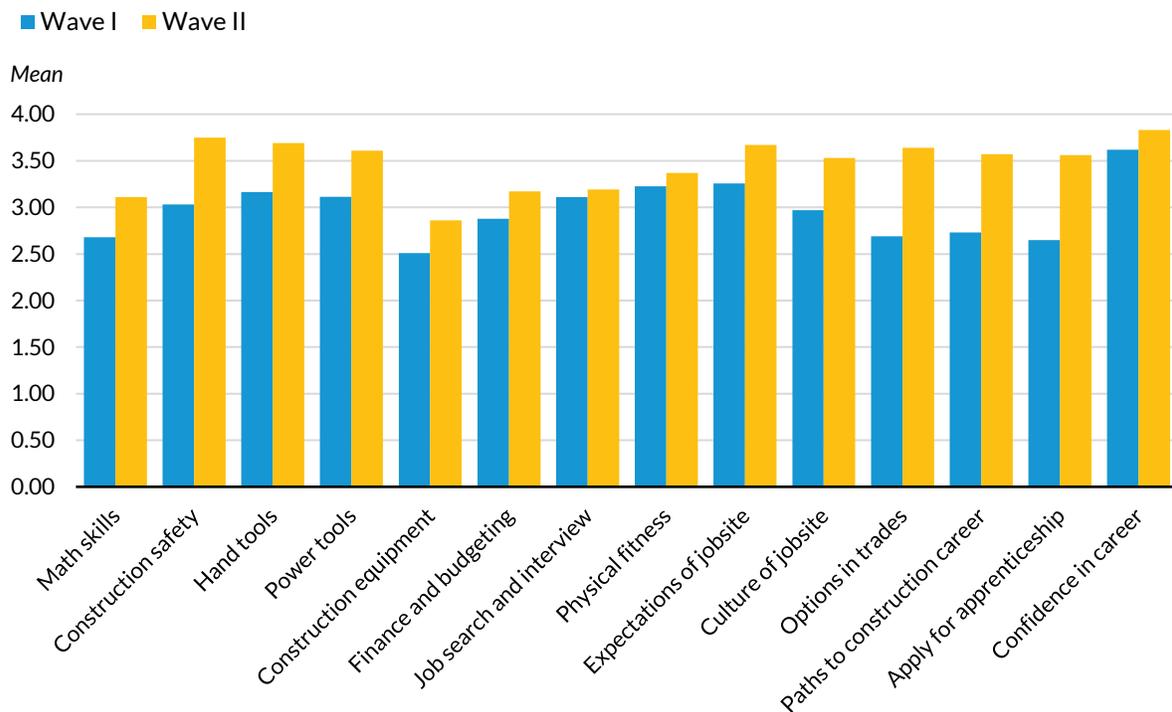
FIGURE 2
Perceived Strengths, Oregon Tradeswomen



Source: Portland State University survey data.

In general, Constructing Hope participants had higher perceptions of skill strength at wave I than did Oregon Tradeswomen participants, and we saw smaller increases in perceptions of skill strength among Constructing Hope participants between the first and second waves (figure 3). The largest gains for Constructing Hope participants were in knowledge of the options for working in the trades, understanding the pathways into a construction career, and knowledge of how to apply for an apprenticeship program. The smallest gains among Constructing Hope participants were in job search and interview skills and in physical fitness.

FIGURE 3
Perceived Strengths, Constructing Hope



Source: Portland State University survey data.

In the wave II survey, at the end of the preapprenticeship program, we asked participants this open-ended question: “What do you see as the three *most important things you learned* from your preapprenticeship program?” For both programs, participants’ responses largely fell into four broad categories:

- **Tools and skills.** Knowing how to work with hand tools or power tools and other construction skills, including safety and math
- **Soft skills.** Having confidence, strong communication skills, a good attitude, and the ability to work in teams
- **Knowledge about working on construction jobsites.** Understanding construction culture and punctuality
- **Knowledge about trade careers.** Knowing how to apply for apprenticeship programs and what resources are available

Below is a selection of responses from the open-ended question about the most important things students learned:

Learning how to apply for apprenticeship in different trades (Constructing Hope student)

The hands-on training to get a better job and to have a brighter future (Constructing Hope student)

Basic carpentry skills, [which] made me more confident about walking into a construction site (Oregon Tradeswomen student)

Patience working with different kinds of people (Constructing Hope student)

Be on time (Constructing Hope student)

Seeing that career support, counseling, and connections are out there (aka people are rooting for me!) (Oregon Tradeswomen student)

Empowerment of seeing women in the trades (Oregon Tradeswomen student)

The benefit of sisterhood (Oregon Tradeswomen student)

Some Students Had Barriers to Completing Preapprenticeship Programs and Entering Apprenticeship Programs

The completion rate for the two cohorts of Oregon Tradeswomen preapprenticeship students in our study was 87 percent, and the completion rate for Constructing Hope was 76 percent. In both programs, students who drop out or are dismissed can reenroll in a later session. During our study period, two participants in Constructing Hope dropped out of the January class but reenrolled and completed the program with the April class and are considered to have completed the program for our study purposes.

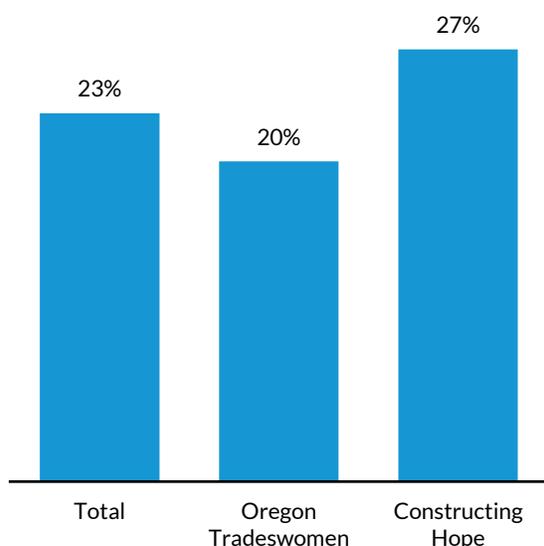
Perhaps surprisingly, among Oregon Tradeswomen students, there was no positive association between perceived strengths at wave I and preapprenticeship completion: Oregon Tradeswomen students who completed the preapprenticeship reported lower perceptions of skill level than those who did not complete the preapprenticeship. This finding was similar among Constructing Hope students, yet differences in first-wave perceived skill levels were smaller among Constructing Hope students completing and not completing a preapprenticeship.

On further analysis, we found that completion of the preapprenticeship program was correlated with other characteristics. In both programs, students with low educational attainment, those receiving public assistance, and those with a criminal history were less likely to complete. Additionally, for Constructing Hope students, women (compared with men) and people with unstable housing were less likely to complete. We also found that among Oregon Tradeswomen participants (all women), those who were partnered or had children in the household were less likely to complete. In contrast, Constructing Hope participants (primarily men) who were *not* partnered were less likely to complete.

Preapprenticeship Programs Provide a Pathway to Enter into Apprenticeship or the Construction Workforce

Eighteen of the 77 participants (24 percent) who completed a preapprenticeship with Oregon Tradeswomen or Constructing Hope in January or April 2016 entered a registered apprenticeship by June 2017. The rate at which those completing entered an apprenticeship was slightly higher among Constructing Hope graduates: 27 percent of Constructing Hope graduates had entered an apprenticeship by June 2017 versus 20 percent of recent Oregon Tradeswomen graduates (figure 4).

FIGURE 4
Share of Preapprenticeship Completers Entering Apprenticeship



Source: Portland State University survey data and Bureau of Labor and Industries Oregon Apprenticeship System data.

Differences exist among those who did or did not enter an apprenticeship. Those who completed the Oregon Tradeswomen preapprenticeship program and entered an apprenticeship by June 2017 were, relative to those who did not enter an apprenticeship, more likely to be non-Hispanic white (100 versus 78 percent), to be partnered (50 versus 32 percent), to have children in their household (25 versus 16 percent), to be receiving public assistance (63 versus 28 percent), and to have a criminal record (13 versus 9 percent). Those entering an apprenticeship were less likely to have a high school diploma (75 versus 81 percent) and less likely to be employed (50 versus 63 percent). And among those employed, those entering an apprenticeship had a lower hourly wage (\$10.75 versus \$12.30). Among women completing a preapprenticeship through Oregon Tradeswomen, having fewer opportunities for employment, being more disadvantaged, and having children in the household may be factors leading them to choose apprenticeship as a path to employment.

Similarly, those entering an apprenticeship who completed the Constructing Hope preapprenticeship were more economically disadvantaged, relative to their peers not entering an apprenticeship. Those entering an apprenticeship were less likely to have a high school diploma (50 versus 70 percent) and more likely to have a criminal record (80 versus 70 percent). But among those completing a preapprenticeship through Constructing Hope, those continuing on into an apprenticeship, unlike their Oregon Tradeswomen counterparts, were less likely to be partnered, less likely to have children at home, and more likely to be employed. Perhaps the route from preapprenticeship to apprenticeship is different for Oregon Tradeswomen and Constructing Hope participants, a difference possibly attributable to gender, given that Oregon Tradeswomen reaches only women. More work is needed to explore how men and women experience different pathways into apprenticeships and how additional factors, such as family formation and limited economic opportunities, influence these pathways.

Many of those who completed a preapprenticeship might not immediately or ever enter a registered apprenticeship. Many, instead, enter a job in the construction workforce without completing an apprenticeship. By June 2017, 5 of the 15 wave III survey respondents had entered a registered apprenticeship in Oregon, 8 were employed in the construction trades (not as an apprentice), and 2 were neither registered as an apprentice nor employed in the construction trades.

In the wave III survey, given one year after program completion, we asked preapprenticeship graduates who were currently working in the trades, “What do you see as the most important things you learned from your preapprenticeship program that have helped you in the trades?” Below are representative responses:

What the field is really like, how the industry is for women and minorities, and how to actually use the tools! (Oregon Tradeswomen student)

Honestly, it was all so important. I really appreciate the hands-on experience with tools, practice with measuring, and the expectations of an apprentice in a construction trade. It set the bar for my apprenticeship and has made me a much more effective apprentice than I would have been otherwise. My journeyman is a 61-year-old man who has been in the trades his whole life. He told me I’m the best apprentice he’s ever had, because I ask questions, I anticipate what’s coming next and make sure we’re prepared, and I’m not standing around. These are all things that my preapprentice program taught me to do. (Oregon Tradeswomen student)

My program really prepared us to mentally understand and take in working in a male-dominated field. It also gave me the confidence I needed to trust that I can do construction despite my gender. (Oregon Tradeswomen student)

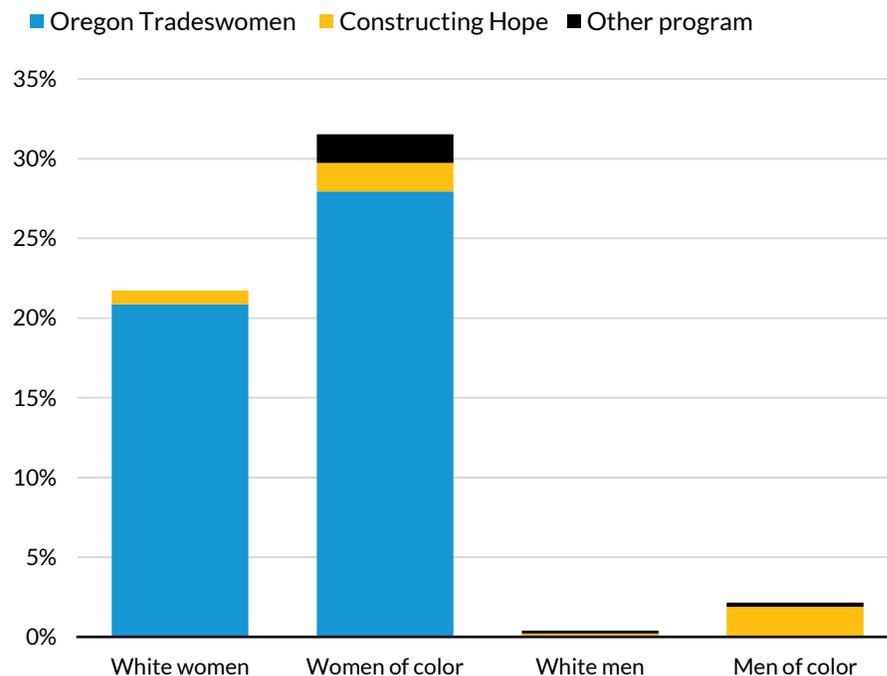
Show up to work on time and early, competence to learn to use tools, learn to carry a 3/4” piece of plywood, have a good attitude and show it. (Oregon Tradeswomen student)

(1) Safety—taking protective safety measures, identifying potential hazards, taking safety seriously for both oneself and for coworkers and others. (2) General construction knowledge. (Familiarity with various tools—identifying the tools and having practice using them. Framing experience.) (3) Building habit of showing up to work on time or early, with tools ready and

wearing [personal protective equipment]. (4) Interviewing practice and advice. (Constructing Hope student)

The OAS data, which include all registered apprentices in Oregon, show that preapprenticeship has been an important pathway into the trades for women (and to a lesser degree, men of color). Figure 5 illustrates the share of apprentices in Oregon active in 2014–15 who completed a preapprenticeship, by gender and race or ethnicity. Among white women apprentices, 21.7 percent had completed a preapprenticeship, and 96 percent of them had completed a preapprenticeship through Oregon Tradeswomen. Similarly, among women of color, 31.5 percent had completed a preapprenticeship. This is compared with only 2.1 percent of men of color and less than 1 percent of white men who were active apprentices in Oregon in 2014–15.

FIGURE 5
Share of Active Apprentices Completing a Preapprenticeship, by Gender and Race, 2014–15



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

Ongoing Support Promoted Retention among Apprentices

Both programs we evaluated offer ongoing support for graduates. This can take the form of one-on-one contact with Oregon Tradeswomen or Constructing Hope staff members or support in group settings, such as Oregon Tradeswomen’s social hours and Constructing Hope’s mentor groups. In the wave III

survey, we asked, “What kinds of ongoing support have you received from your preapprenticeship program?” A selection of responses is shown below:

Oregon Tradeswomen does social hours, tool swaps, interviews, check-ins, job updates and placements, etc. (Oregon Tradeswomen student)

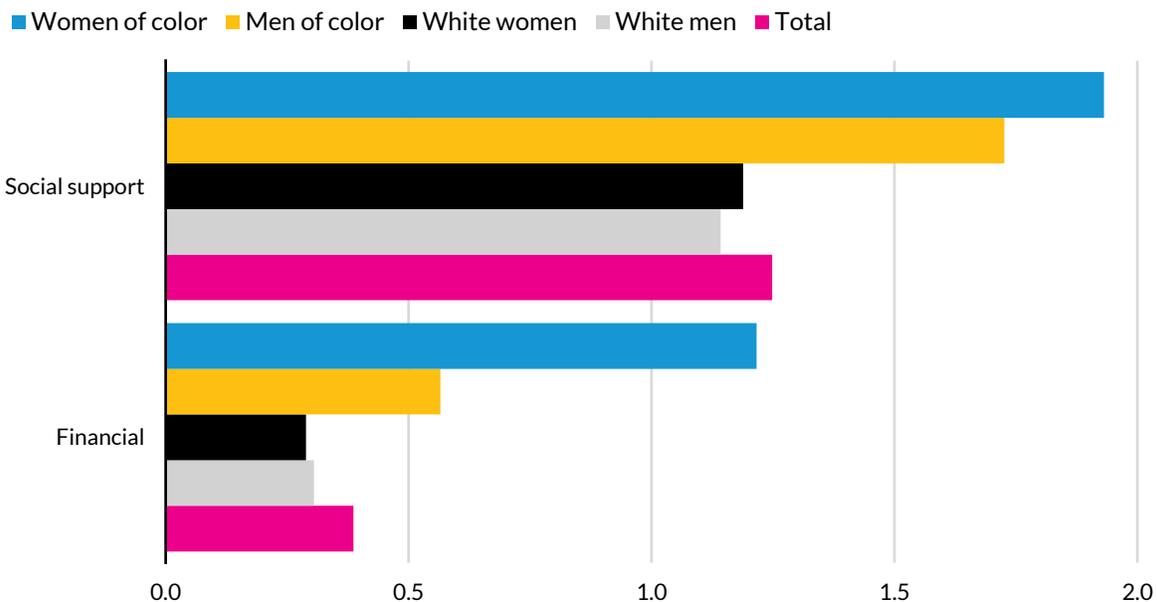
They have been my ongoing cheerleaders. I have received job placement assistance, tools, clothing, boots, safety gear, and rain gear. (Oregon Tradeswomen student)

Oregon Tradeswomen is amazing. I’m currently reaching out to them for other job ideas, as mine isn’t as fulfilling as I had hoped, and they are quick to help me out and give suggestions. They truly want everyone who goes through their program to succeed. (Oregon Tradeswomen student)

I attended a postgraduate “mentor group,” where students met together in a group setting with the preapprenticeship instructor. We updated one another on what we have been doing since graduation. Shared successes and struggles. Received advice. I also frequently receive emails that the instructor sends out. Most of the emails are leads for a potential job. (Constructing Hope student)

Our analysis of OAS data demonstrated that receiving social support had a positive effect on the odds of apprentices completing their program. In fact, the effect of social support was even larger than the effect of financial supportive services we evaluated (figure 6).

FIGURE 6
Change in Log Odds of Completing an Apprenticeship When Receiving Oregon Department of Transportation—Bureau of Labor and Industries Supportive Services, by Race and Gender
2005–15 cohorts of apprentices in eligible trades



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

Discussion

Preapprenticeships diversify the pipeline of potential applicants entering registered apprenticeships in Oregon and offer support to retain workers through apprenticeship and beyond. Preapprenticeships provide skills and knowledge to help students succeed in the construction trades. But some students have disadvantages that affect their ability to complete a preapprenticeship or enter into apprenticeship. Many who complete a preapprenticeship go on to a registered apprenticeship or another position in the construction trades. Overall, preapprenticeships have had a significant effect on diversifying the construction workforce, especially for recruiting women. We found that 21.7 percent of white women and 31.5 percent of women of color apprentices had gained entry into construction via a preapprenticeship. Finally, we find that receiving ongoing support from preapprenticeship programs promotes retention.

Notes

- ¹ For more information on preapprenticeship in Oregon, see “Preapprenticeship,” Oregon Apprenticeship and Training Division, accessed August 27, 2019, www.oregon.gov/boli/ATD/Pages/A_AG_PreApprentice.aspx.
- ² For more information, see the Oregon Tradeswomen website (www.tradeswomen.net) and the Constructing Hope website (www.constructinghope.org).

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Kelly, Maura, and Lindsey Wilkinson. 2017. *Evaluation of Preapprenticeship and Retention Services in the Trades*. Final report submitted to Oregon Tradeswomen and Constructing Hope.

Wilkinson, Lindsey, and Maura Kelly. 2016. *(Still) Building A More Diverse Workforce in the Highway Trades: 2016 Evaluation of the ODOT/BOLI Highway Construction Workforce Development Program*. Final report submitted to the Oregon Bureau of Labor and Industries and Oregon Department of Transportation.

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5. Engaging the Underserved

In “The Experiences of Black Male Apprentices,” Elizabeth Standafer recaps the general evolution of work-based learning and apprenticeship infused with the push for increased opportunity and diversification of programs for minority groups. She then takes a closer look at the experiences of three black male apprentices and breaks her findings down into three themes she relates directly to their journeys: career awareness, economic mobility, and wraparound supportive services. Standafer concludes with valuable insights for parents, high school career staff, employers, and apprentices.

Here’s a little-known fact: 37 percent of the people with disabilities ages 18 to 64 were employed in 2017, but among 18-to-64-year-olds without disabilities, the labor force participation rate was 77.2 percent. In “Disability Inclusion in Apprenticeship Programs,” Robert Silverstein and Katia Albanese make the case that work-based learning programs like apprenticeship may be particularly suited for linking people with disabilities and other underrepresented groups with workplace opportunities. This makes sense, considering that “diversity and inclusion, including disability inclusion, is a cornerstone of successful apprenticeship programs.” The authors provide a thorough overview of federal policy, state policies, and preapprenticeship and apprenticeship initiatives in action, all related to disability inclusion and talent development for the workplace. They wrap up with a list of resources from the US Department of Labor to help those interested in expanding apprenticeship as a career pathway for all workers, including those with disabilities.

Paul Knepper and Veronica Cano summarize the history and complexity of reentry from prison and raise excellent points easily applicable to the needs of underserved or disadvantaged workforce development programs across the board. A particular standout in this chapter, “Apprenticeship and Reentry from Prison,” is this point: “As important as it is to determine *whether* job training programs lower recidivism, it is important to know *why* any particular program should lower recidivism.” Further, along with challenges to successful reentry and highlights of evaluations of such programs, the authors incorporate another issue into their mix: desistance, or moving beyond unemployment as a cause leading criminal activity to how and why people *stop* committing crimes. The authors define the role of apprenticeships in facilitating successful transition to employment.

An untapped and undervalued sector of the workforce is employees ages 50 and older. Andrew Sezonov and Nicholas Wyman discuss the benefits associated with mature workers in “Retraining and Retaining Older Workers.” A large portion of this chapter summarizes the authors’ conversation with a prominent Australian businessperson who has studied the implications of the aging population and delivered the *Strategic Review of the Commonwealth Government’s National Health and Medical Research Council* to the Australian government. Despite employers’ ability to embrace social trends, like gender equality, the businessperson believes employers are moving backward, instead of forward, on the issue of age equality and are missing the boat on a valuable workplace resource.

The Experiences of Black Male Apprentices

Elizabeth Standafer

Evidence shows that American students are insufficiently prepared for college and work upon graduation, which contributes to the widening skills gap and lack of economic mobility for today's youth. These challenges exacerbate the issues facing Black males entering the labor market who experience the erosion of community ties, limited social resources, and increased occupational disengagement (Bennett 2007). Therein lies an opportunity and responsibility to prepare all students for engagement and participation in the workforce. The key to success of any program working with marginalized populations is identifying the right people to work with them. People who are committed to the mission (access and equity) are of greater importance than even the program itself (Foran 2015). How stakeholders implement and modify programs to fit the needs of special populations has important implications for student achievement and success in future employment. Additionally, policymakers, community members, educational leaders, and researchers need to better understand the role of social support for marginalized students in occupational engagement to reduce their risk of disengagement as an adult.

A logical way to determine successful work-based learning practices that have supported persistence among Black male participants is to explore the topic with students selected for preapprenticeship programs in high school and later completed a registered apprenticeship. Access and equity help ensure that persistence leads to economic mobility for Black males in apprenticeship programs. If only certain demographics of students benefit from work-based learning, others will continue to be caught in the cycle of underemployment and unemployment that has contributed to economic and labor market issues across the country.

The History of Apprenticeship

Apprenticeship is the oldest known type of vocational education in the United States and has long been used to develop workplace competence. Apprenticeship came to America in the early colonial period, resembling European models that were modified to suit conditions in the New World. Apprenticeship was the sole opportunity for poor people to be educated. Though it was considered the most important educational agency of the period, it was not regarded as part of the school curriculum (Gordon 2014).

The first major development in apprenticeship was in the 19th century with the emergence of private trade schools. Students were apprenticed under school trustees and were offered trade and general education. This pathway was heavily influenced by the Factory Act of 1802, passed in England,

which required instruction for apprentices and limited the number of hours children could work (Sanderson 1967). The rise of an industrial revolution in America caused the decline of apprenticeship as an educational institution. With a heavy increase in demand for manufactured goods, machine operators, for example, no longer needed long apprenticeships to learn their trade. Personal guidance and instruction from a master craftsman, a hallmark of apprenticeship, were lost. The factory system had the largest impact on apprenticeship in the 19th century, as large groups trained to work in a specific task replaced small labor forces. Industries became centralized and developed subdivisions for which training was expensive. Trades became overcrowded with apprentices who were no longer taught technique and craft, and they were being kept at a low wage. US employers avoided making training investments in potentially mobile apprentices. Meanwhile, new education and training systems emerged, such as free public elementary schools, and workers began to learn job skills from parents or on-the-job training programs.

The second development in apprenticeship came through public school programs that offered opportunities for manual training, commercial training, and domestic science. The curriculum taught improved perception, observation, practical judgment, visual accuracy, and manual dexterity with a focus on doing things instead of talking and thinking about them. By the 20th century, students were using manual training for vocational purposes. Apprenticeship became more intentional, and a separate system of instruction, vocational education, was developed (Gordon 2014).

Today, apprenticeship is the product of an evolutionary process continually changing the federal role in career and technical education. As World War I cut off access to skilled immigrant labor, the National Association of Manufacturing began to recognize that the factory system had destroyed apprenticeship as a source of developing a skilled workforce. By 1934, a federal committee was formed to address apprenticeship training, and in 1937, the National Apprenticeship Act made a legal provision to continue the development and establishment of apprenticeship programs by adding standards to guide industry in employing and training apprentices (Gordon 2014). By the 1940s, many states had adopted recommendations from the International Labor Organization that included written terms of an agreement between the industry and apprentice, learning schedules, wage scales, and attendance in classes for related instruction.

Apprentices today are high school students or young adults and still work under the terms of formal agreements set out in the National Apprenticeship Act. The average age of an apprentice is 25 (Gordon 2014). They earn real wages and live in their own homes, unlike colonial-era participants. Wages are about half those paid to full-time workers, but they increase as apprentices learn more skills. The length of the apprenticeship and the wage scale depend on the occupation and related instruction. Apprenticeship, however, exceeds return from other types of training in postprogram earnings, with a net of more than \$50,000 for the first two and a half years after program completion. Because students learn hands-on at the company while learning the occupation's theoretical side in the career and technical education classroom, the model requires organization and coordination among several entities to create successful programs. Registered apprenticeship has evolved in the US as part of a

government credentialing system designed to develop specific skills and competencies leading to journeyworker status. A journeyworker certificate is a portable credential recognized by the US Department of Labor (USDOL) as part of a registered apprenticeship program encompassing a broader range of industry sectors than historical programs created for skilled trades such as construction and manufacturing.

Black participation in apprenticeship can be traced back to the 1600s. From 1619 to 1846, many apprenticeship and manual labor programs were available to slaves (Gordon 2014). In 1881, Booker T. Washington was selected to open a new vocational, private industrial institution called Tuskegee based on the principles of cognitive problem-solving skills and learning by doing. The school was placed on 2,300 acres with 123 buildings and vocational programs ranging from electricity, machine shop, and bricklaying to painting and basket making. After the Civil War, Washington and Frederick Douglass spoke about expanding vocational training for African Americans. The belief that industrial education would build economic self-reliance and better integrate Black people into industrial America had other Black leaders of the time like W. E. B. DuBois speaking out that this ideology was acceptance of a substandard of living for the Black race (Hinman 2005). From 1910 to 1930, public secondary programs began offering manual training for Black students to address rural, poor, and uneducated African Americans in the South and the high attrition rate in high school (Gordon 2014). In the 1930s, industrial advancements demanded more skilled workers, and White schools began emphasizing industrial training to claim access to the higher-paying jobs. Moreover, the National Apprenticeship Act of 1937 was initiated as Black students were offered more academic education and less vocational training, likely leading to lower participation in certain careers and contributing to greater economic disparity (Gordon 2014). Though strides toward greater equality were made possible in the 1960s through legislation like the Elementary and Secondary Education Act, Maurizi (1972) found that the USDOL's new programs geared toward equal job opportunities for minority participation in registered apprenticeship lacked support for implementation. The program required that the share of minority apprentices at a company match the share of minority participation in the local labor force. Though it received resounding support from minority groups, organized labor groups pushed back on the recommendation, citing difficulty finding eligible or interested minority candidates (Maurizi 1972).

The concerns around minority participation continue today. Workforce participation affects a society's prosperity, as confinement to certain job opportunities can reduce a demographic group's economic mobility. In the US, nearly three-fourths of apprentices are White, while the Black male participation rate is less than 15 percent (Helper et al. 2016). In 2016, the Equal Employment Opportunity Commission released updated regulations for programs registered through the USDOL. The USDOL states that the new regulations are designed to help businesses reach a larger and more diverse pool of workers, and that "when all workers, including women, minorities, and individuals with disabilities, have the opportunity to become apprentices, we tap into our nation's full potential and open new career pathways for American workers."¹ Companies sponsoring apprenticeship were given 180 days to comply with the new nondiscrimination protections and were given up to two years to comply

with obligations related to their affirmative action programs. Despite pushback from potential sponsors, the USDOL maintains that the updates reflect the 21st-century workplace and modern approaches for increasing diversity and protecting against discrimination.

A Multicase Study of Black Male Youth Apprentices

A multicase study focused on the experiences of three Black male youth apprentices from North Carolina who entered an apprenticeship program in high school through recruitment that included a preapprenticeship. The apprentices' experiences from program recruitment to apprenticeship placement and completion revealed three central themes that led to their success: career awareness, economic mobility, and wraparound supportive services.

The first apprentice, Phineas, was recruited for a high school preapprenticeship during his junior year. He became a registered apprentice his senior year at an advanced manufacturing company as a process technician. Raised in a single-parent household by his mother, he came from an economically disadvantaged background and has never known his father. The men in his family have been stuck in a cycle of poverty, and Phineas's mom was eager to find better options for her son. Phineas was considering four-year college as part of his postsecondary plan because he wanted to play baseball and because his friends were also considering that path. The career development coordinator (CDC) at his high school describes him as a solid but average student with strong math skills. Phineas, who sees himself as mature for his age, said he also thought he was a "pretty good student" and said he was close to a 3.4 grade point average upon high school graduation. He felt he could be successful in college but was unsure how he would pay for it. Because of his interest in math and his participation in career-awareness activities at his high school, he knew he was interested in engineering.

Phineas did not initially respond to advertisements and marketing campaigns aiming to recruit participants from his school. It wasn't until he mentioned the opportunity to his mother, after the second round of industry-led promotions, that he began to consider the opportunity. His initial thought that he would prefer to attend a four-year college to play baseball continued to be fueled by discussion among his friends. But his mother and his aunt saw the value in the apprenticeship opportunity, which drove him to contact the CDC at his school to apply. Phineas went through a rigorous recruitment period during his junior year. He attended interest meetings at his school led by the industries hiring apprentices. These companies are members of an industry-led consortium looking for apprentices to fill their labor shortages with average academic students who have the potential to do well in the classroom and have strong manual skills. Phineas attended required open house tours before submitting his application and transcripts. He and other selected applicants were invited to an orientation where they went through a weeklong interview process, demonstrating their ability to complete hands-on projects and taking various assessments. Phineas was selected as a preapprentice for the following summer and worked for the company for six weeks while taking community college

coursework. After the six-week summer experience, a plastics manufacturing company selected Phineas to be a registered apprentice. He was paid for both his time at work and his seat time at the community college, and his associate's degree was paid, amounting to a scholarship of more than \$125,000. He attended a signing ceremony where his accomplishments were celebrated with local partners, including school system personnel, industry partners, community college leadership, and community leaders. Phineas began as a registered apprentice during his senior year. He participated in high school classes, community college coursework, and on-the-job learning developed by the high school, industry, and community college. He continued his apprenticeship after high school and became a full-time employee and community college student.

The second apprentice, Jerry, was recruited for a high school preapprenticeship during his junior year. During his senior year, he became a registered apprentice at an advanced manufacturing company as a machinist. Raised in a two-parent household, he came from an economically disadvantaged background, and many of his peers were affiliated with gangs. The CDC at his high school describes him as an average student who enjoyed math and working hands-on, with a natural aptitude for learning. He noted that Jerry had a rough start and that the pressure and influence of his peer group's gang mentality nearly derailed his academic career. His original postsecondary plan was to join the coast guard. The comprehensive high school he attended was divided into four learning communities that promote diversity and small school size. Jerry's learning community, engineering, had around 500 students. He was recruited by a math teacher and a career development coordinator because of his skills in math and hands-on projects.

Jerry was initially skeptical of the presentation where he heard about the apprenticeship opportunity. He did not believe he would receive a free college education and wrote the opportunity off as a hoax. It would take two more contacts and direct conversations with company representatives before Jerry would be persuaded to share the information with his parents and apply for the apprenticeship. He began the recruitment process in the middle of his senior year and became registered as an apprentice at an advanced manufacturing company in the energy sector after graduation.

The third apprentice, Mark, entered the apprenticeship recruitment phase during his junior year of high school as part of the industry's first cohort of apprentices. Mark, however, was not selected to be part of the first cohort. He tried again and became an apprentice the following year at another industry on the recommendation of the company that did not originally select him. Mark was unsure what he was going to do after his failed preapprenticeship experience. A strong math student, he knew that engineering interested him. He also knew he had to find a way to help support himself and his family. He had average grades but was not sure it would be enough to get him into a four-year school. The chance to go through a second recruitment phase landed him an apprenticeship position at an advanced manufacturing company and entrance into a community college with full paid tuition.

Mark was raised in a foster family by an elderly mother where he was the oldest of five children. Mark stayed in contact with his biological father, who often relied on Mark's support. Mark worked closely with the CDC at his high school who was a mentor to him.

Results

Theme 1: Career Awareness

Each apprentice began by participating in authentic career development exercises through the career and technical education program at his school. All of them were aware of a "career counselor" who was visiting classrooms to help students define their career goals. All three took career assessments that identified their strengths and workplace skills. The CDCs used career assessments to locate talent for the apprenticeship program. They used students' assessment results to develop and customize presentations for use in one-on-one discussions with students. This led to targeted work-based learning activities so students could see the work environment firsthand and the economic advantages of pay and benefits the companies offered. All the CDCs coupled this idea of economic mobility in an occupation with the benefits of a community college education to debunk the stigma of a nonbaccalaureate pathway. By presenting the facts about labor market data and providing a tangible way for students to connect them to local industry opportunities, the CDCs gained the students' trust. The apprentices and the industries attested to the critical role the CDCs played in developing targeted career awareness strategies that supported apprentices' informed decisionmaking.

Another facet of career awareness occurred within the industry during recruitment. In all three cases, the company visited the apprentice at school and required the apprentice and his parent or caregiver to visit the company. Additionally, all three apprentices participated in an orientation program (a multiple-evening interview process), where they were taught industry-related concepts, completed a project, and participated in college placement testing before being offered a preapprenticeship. All the apprentices indicated that going into the company and applying their math and hands-on skills in an authentic setting during the orientation increased their understanding of the apprenticeship position they were seeking and the career opportunities in the company. Though only two of the three initially completed the preapprenticeship with an apprenticeship bid, they all articulated that the preapprenticeship opened their eyes to what an apprenticeship had to offer and spurred a sense of competitiveness in them to earn the spot. Initially, two of the three had settled on a four-year-degree route in engineering. The other wanted to go into the military. All of them learned through conversations with their CDC about the benefits of earning an associate's degree the company pays for. All three apprentices completed the associate's degree and have opportunities through their companies to further their education in engineering at a university. All three participants indicated that, though they were initially skeptical, entering the engineering field through apprenticeship has given them more opportunities than their friends who attended a four-year university. All three used the word "pathway"

to describe their journey from high school to postsecondary completion and stated that each company made it clear how they would start within the company and how they could move up. What the apprentices found enticing was knowing how they could move beyond their apprenticeable occupations into other departments and roles to make more money and to have an opportunity for more education.

Theme 2: Economic Mobility

How the apprentices defined success tangibly and ideologically through exposure and opportunity created a transformation. All three entered the recruitment process after they were made aware of the benefits, hoping to rise above the situations they came from. They were drawn to the program and sustained their successes because of the ability to earn a college degree for free, earn full-time employment benefits, and make higher than minimum wage all by their first year out of high school. All three apprentices saved money to buy their own transportation, are free from college debt, and are better off financially than their parents while only in their late teens and early twenties. Additionally, all three felt personal gratification for being able to give back to their families financially. Each felt pride in knowing they have accomplished something by completing the apprenticeship program and earning their degree. They see completing an apprenticeship as the beginning of their success stories. All three indicated the high value they now put on having a solid career path, setting concrete goals, and choosing the right type of education to achieve those goals. The experience has transformed their ideas about what success after high school looks like and how they see themselves as contributing members of their families, companies, and local communities. They have the desire to create a better life for themselves and have the tools and network to ensure their success.

Theme 3: Wraparound Supportive Services

Perhaps the most compelling and robust similarity among the three apprentices are the wraparound supportive services that began in the early days of recruitment, which led to preapprenticeship and persisted through the apprenticeship program. In each case, recruitment began and ended with a focus on apprentices' intrinsic qualities supported throughout by the roles and actions of their parents, CDCs, industry mentors, and fellow apprentices.

Each apprentice had similar traits and qualities that made them strong candidates from the beginning. All of them were open to the opportunity, with a drive and desire to achieve more than their circumstances allowed. The support staff working with the apprentices acknowledged that regardless of the support they needed along the way, the apprentices approached the opportunity with a positive attitude, strong soft skills, and a willingness to learn. The apprentices also had an aptitude for the work they were doing along with strong academic and hands-on skills. From the beginning, apprentices were allowed input into the process. After spending time learning about the companies through interest meetings and tours, each apprentice was given the opportunity to provide input on their preferred

preapprenticeship site if they were to be selected for the next phase. Once in the program, they were asked to give feedback to improve the program, mentor new potential apprentices, and join the recruitment effort with the company by going into local high schools to tell their story.

All three apprentices had parental support. Each had someone at home who provided support and encouragement. Their parents attended open house tours at the company. Though Phineas may have had the most interactive parent and extended family, all the parents put themselves in a position to be informed about the company and the program. For Jerry, his parents' influence made the difference in his decision to move forward in the process. Parents provided the apprentices transportation until they could afford their own. Additionally, all parents used positive and affirming language about pursuing the opportunity.

The high school CDCs in this study were a part of the support mechanism that connected the home and the apprentice to the industry. They provided activities to develop career competencies, including career assessments, field trips, classroom presentations, and marketing campaigns. Each apprentice understood his abilities as related to careers from these exercises, which made it easy for the CDC to recruit apprentices for the program who had a proclivity toward the type of work in the apprenticeship. It also set the apprentices up for success in recruitment, as each expressed that the orientation process and preapprenticeship experience offered tasks that challenged and excited them. The CDCs ensured the apprentices' success beyond recruiting them for the program. They each formed a mentor-apprentice bond and were available throughout the process, particularly as the apprentices transitioned from high school into community college coursework and on-the-job learning. Each CDC communicated with the apprentices via text messages, phone calls, emails, and face-to-face meetings, and all three apprentices said their CDC was always available. The CDCs provided encouragement and support through conversations or more tangible means by providing transportation or meals, setting up tutoring, and accompanying them to company events. CDCs also formed tight bonds with the industry representatives at the companies. Industry representatives working with the apprentices praised the CDCs' dedication to making the apprentices successful.

The industry representatives also relied on the CDCs for support when challenges arose. Companies regularly reached out to the CDCs when the apprentice was having difficulties. In each case, the CDCs continued mentoring the apprentices even after they had left high school, encouraging them to return to the school to share their successes or to catch up on progress.

Each industry in this study has someone at the company who oversees apprentice training. The apprentices described these people as their go-to person at the company. Early on, these representatives came to the school to meet the apprentices. They also worked with apprentices during the orientation and preapprenticeship process. Because the industry representative decides who receives apprenticeship offers, they become familiar with their apprentices early on. After hiring an apprentice, the industry representative stays in close contact. Each representative talked to the apprentices every day. The apprentices all indicated that the representative that recruited them would

do whatever it took to help them succeed, from being a listening ear to arranging tutoring sessions or reaching out to find other support from the college or high school. The industry representatives monitored the apprentices' community college progress and worked with their mentors on the shop floor about on-the-job learning. All the apprentices had positive interactions with the mentors working on the floor who were selected to teach them job tasks. All three apprentices received advice from seasoned mentors, often including tutoring for their community college courses. The apprentices were proud to be recognized and commended by their mentors for their talent and work ethic. The apprentices credited the apprenticeship for creating a positive culture within the company between different generations of workers. They all felt welcomed and part of the company.

All the companies in the study operate as part of an industry consortium. They hired apprentices from a cohort of students that went through the recruitment together from multiple schools. All the apprentices could identify other apprentices with whom they had bonded. All apprentices in a cohort of recruits, no matter their company, attended community college classes together. The three apprentices in this study found support and friendship in the cohort across and within companies. The collaboration among these aspiring apprentices started early in orientation, where the candidates completed hands-on projects together. Although they were all competing against each other, they had to help each other to succeed. The apprentices relied on each other for tutoring, transportation, and emotional support, challenging each other to stay the course.

The apprentices feel a sense of accomplishment for completing their apprenticeship. They have become ambassadors for the youth apprenticeship program in their areas. All three work with their industry representative and former CDCs to recruit other students, and some are student advisers. The industry representatives and CDCs attest to the power each apprentice's story has in capturing the attention of other youth who may identify with them. The apprentices recruit and support other high school youth and have been instrumental in refining the programs at their companies. All three apprentices talked about times when industry representatives sought their input about the program. Moreover, all three could see their suggested changes implemented in the program. The three apprentices recognized that they had multiple levels of support and that they were not operating in isolation. Parents, CDCs, industry representatives, shop floor mentors, and the apprentices were all part of the support structure in the apprenticeship program and filled in any gaps.

Note

¹ "Equal Employment Opportunity," US Department of Labor, Employment and Training Administration, last updated August 15, 2019, <https://www.doleta.gov/oa/eoo/>.

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Elizabeth Standafer's career path in education ranges from the elementary level up through postsecondary education. She has been a classroom teacher, school counselor, career development coordinator, and district-level administrator for both career and technical education and secondary education. Standafer has been certified as a career development facilitator and has been twice certified by the Center for Occupational Research and Development in pathway leadership. She also received certification from the National Center for Construction and Education Research as a core curriculum instructor. She has worked on research projects with both the University of Minnesota and the University of North Carolina at Charlotte. Her research was published as part of *Teenage Fathers* book revision. In 2015, Standafer left public K–12 education to become a certified career pathway facilitator for the North Carolina Department of Commerce. She is the statewide youth apprenticeship coordinator for ApprenticeshipNC with the North Carolina Community College System, where she promotes and implements new apprenticeship programs with local and regional stakeholders. She completed her doctoral work at Appalachian State University.

Claudia Sampson, Rural Alaskan Health Aide

Sheri Patraw

Five years ago, Claudia was looking for a career opportunity in her hometown of Kiana, Alaska. She wanted to do something that would improve health and wellness in her community, which experiences high suicide and substance abuse rates. Claudia accepted a position as a behavioral health aide for Maniilaq Association, the regional tribal health organization: “I was nervous but wanted to help our people. I had to ask myself, Is this something I can do? Is this something I can really learn? But in the end, I know somebody has to do it in the village, and if you get the right training and know your people, yes, you can do this.”

The health aide model was developed in Alaska to address the health needs of Alaska Native people. Alaska Native villages vary in size from 20 to 1,000 people in a state whose land mass equals half the land mass of the lower 48 states. The majority of these communities are accessible only by boat or small aircraft, which affects access to health care. Alaska is divided into 14 tribal health regions based on language and cultural commonalities. Each region has one hospital in its largest hub community. The hospital employs doctors, nurses, dentists, and social workers who provide primary care services locally and via telehealth video technologies. These same technologies are used to provide mentoring and clinical oversight to health aides in remote communities.

Alaska has three health aide training programs that equip people in remote communities to provide medical, dental, or behavioral health services within a specific scope of practice. Claudia applied for the behavioral health aide registered apprenticeship program sponsored by the Alaska Native Tribal Health Consortium. This program allows Claudia to remain in her remote community while receiving distance-delivered training and mentoring from a licensed social worker in the hub community of Kotzebue. Claudia said, “Behavioral health is an area where people are not always ready to ask for help, which can make treatment difficult.” Claudia’s mentor, Marne, admits that she has learned as much from Claudia as Claudia has learned from her. When Marne arrived in Alaska from Mississippi, she knew nothing of the local culture or the approaches needed to maximize trust. Marne said, “Claudia taught me everything she knew.” Marne reports their working relationship has a reciprocal quality, and Claudia is quickly moving into the role of mentor for other new social workers who are new to the state and the local culture.

Claudia recalls the struggles she had in secondary school where she took special classes for students with learning difficulties. In contrast, by learning on the job in a field she’s passionate about, she is developing confidence in a complex field because human beings are complex and no two people are alike. Throughout the challenges presented by working and going to school, Claudia has been unwavering and committed to achieving her career goals. By the end of 2019, Claudia expects to

complete the behavioral health aide registered apprenticeship and an associate's degree in behavioral health aide studies. She will be the first in her family to earn a college degree. It is the first building block to more advanced degrees in the field, should Claudia accept the challenge.



Photo courtesy of Claudia Sampson.

Sheri Patraw was born and raised in Bethel, Alaska, and is of Yup'ik Eskimo and Dena'ina Indian descent. As program manager of the Behavioral Health Aide Program for the Alaska Native Tribal Health Consortium, Patraw elevates the profession of village-based behavioral health providers and helps them address a wide array of behavioral health issues with confidence.

Disability Inclusion in Apprenticeship Programs

Robert Silverstein and Katia Albanese

People with disabilities have a lower labor force participation rate than their peers without disabilities. As reported in the *2018 Annual Disability Statistics Compendium*, the employment-to-population ratio for people with disabilities in 2017 was 37 percent, which means that only 37 percent of the population of 18-to-64-year-olds (people of working age) with disabilities were employed. On the other hand, the labor force participation rate among people without disabilities was 77.2 percent. This translates to a 40 percent employment gap, which is the national average. In 22 states, the gap is even larger.¹

The reasons for these disparities are multifaceted and complex: employers are sometimes biased, some people with disabilities lack the appropriate skills and training to qualify for open positions, and there is a great deal of misinformation about employee rights and employer responsibilities related to accommodations, and other issues.

People with disabilities do participate and succeed in all kinds of job preparation programs, but work-based learning programs, such as apprenticeship and career and technical education with a worksite component, may be particularly effective for linking employers with people with disabilities and other underrepresented groups. At a time when employers report that many job applicants lack the occupational and technical skills required, and that many applicants lack critical “soft skills” and on-the-job experience, these “blended” programs can help fill skill gaps.

But as with labor force participation overall, people with disabilities take part in such work-based learning programs at a much lower rate than people without disabilities. Furthermore, when it comes to apprenticeship programs in particular, opportunities have typically concentrated around a small cluster of industries. But the convergence of two factors in recent years—an increased focus on apprenticeship as a workforce development strategy and the expansion of the model into nontraditional industries—presents an opportunity to narrow this gap. With more and more programs starting in high-growth industries—such as health care, information technology (IT), transportation, and energy—it could be said that “this is not your father’s apprenticeship.” Apprenticeships can help businesses, both large and small, not only meet their workforce needs but also attract new and more diverse talent. In short, the wider range of opportunities available makes apprenticeship a good career strategy for a wider range of people, including people with disabilities.

The Federal Diversity and Inclusion Policy Framework

Diversity and inclusion, including disability inclusion, is a cornerstone of successful apprenticeship programs. The US Department of Labor (DOL) protects applicants and participants in registered apprenticeships—that is, certified programs that meet national standards—from discrimination on the basis of disability. Moreover, registered apprenticeship programs are required to take proactive steps to recruit people with disabilities. These steps support an inclusive workforce, benefitting all employees and businesses.

The federal policy framework applicable to education, training, and equal employment opportunity (nondiscrimination) provides a road map for ensuring diversity and inclusion of people with disabilities in apprenticeship programs, consistent with the four core goals of disability policy—equal opportunity, full participation, independent living, and economic self-sufficiency.

The federal policy framework includes the following elements:

- the Individuals with Disabilities Education Act² (IDEA) and implementing regulations,³ which ensure students with disabilities receive a free and appropriate public education in the least restrictive environment, including transition services starting at age 16 that include work-based learning experiences
- Title I of the Rehabilitation Act of 1973, as amended,⁴ and implementing regulations,⁵ which support a state system of vocational rehabilitation programs, including work-based learning experiences
- Title I of the Workforce Innovation and Opportunity Act (WIOA)⁶ and implementing regulations,⁷ which establish a system of American Job Centers, emphasize career pathways and work-based learning experiences, and include equal opportunity requirements⁸
- the Americans with Disabilities Act⁹ and implementing regulations,¹⁰ including equal opportunity (nondiscrimination) applicable to Title I (employment), Title II (state and local government), and Title III (public accommodations)
- Section 503 of the Rehabilitation Act of 1973, as amended,¹¹ and implementing regulations,¹² which include equal employment opportunity (nondiscrimination) and affirmative action requirements applicable to federal contractors
- the National Apprenticeship Act of 1937, as amended,¹³ and implementing regulations,¹⁴ which include equal employment opportunity and affirmative action requirements
- Executive Order 13801 “Expanding Apprenticeships in America”¹⁵ and Department of Labor, Employment and Training Administration Training and Employment Notice No. 3-18, Change 1 (June 25, 2019) “Creating Industry-Recognized Apprenticeship Programs to Expand Opportunity in America”¹⁶

Although the definition of a person with a disability varies depending on the policy context, a general definition is a person who has a physical or mental impairment that substantially limits a major life activity, such as learning or working.

Within the context of this policy framework road map, this chapter addresses the following topics:

- benefits, terms, conditions, and privileges associated with apprenticeship programs
- principles of equal employment opportunity (Nondiscrimination)
- strategic plans and management by objectives
- collaboration
- preapprenticeship programs

Benefits, Terms, Conditions, and Privileges Associated with Apprenticeships

Equal employment opportunity policies, practices, and procedures applicable to apprenticeship programs cover the benefits, terms, conditions, and privileges associated with apprenticeship, including these:

- recruitment, outreach, and selection procedures (including performance tests, work experience requirements, and formal interviews)
- hiring or placement, upgrading, periodic advancement, promotion, demotion, transfer, layoff, termination, right of return from layoff, and rehiring
- rotation among work processes
- imposition of penalties or other disciplinary action
- rates of pay or any other form of compensation and changes in compensation
- conditions of work
- hours of work and hours of training provided
- job assignments
- leaves of absence, sick leave, or another leave

Principles of Equal Employment Opportunity (Nondiscrimination)

Equal employment opportunity (nondiscrimination) includes three components:

- individualization

- effective and meaningful participation
- the most integrated setting appropriate

Individualization entails making decisions affecting a person with a disability based on facts, objective evidence, state-of-the-art science, and a person’s strengths, abilities, capabilities, needs, and preferences. Decisions are not based on administrative convenience, generalizations, labels, stereotypes, or mythologies. It would be inappropriate to automatically exclude people with disabilities from apprenticeship programs in a particular industry based on a flawed notion that they cannot succeed in that industry. That is not to say that some people with certain impairments (as well as certain people without disabilities) may not be able to perform certain jobs.

Effective and meaningful opportunities should be extended to all apprenticeship program participants—including people with disabilities, not just the “average person”—in the form of reasonable accommodations, unless it would cause undue hardship or a direct threat to worker health or safety. It would be appropriate to modify or adjust an application process or the work environment to help a person perform essential job functions. It would also be appropriate to ensure that people with disabilities can access and use information and data provided via the internet or an intranet. It would not be appropriate, however, for a person to demand an adjustment that would increase the risk of substantial harm to worker health or safety.

The apprenticeship program should be administered in the *most integrated setting appropriate*. The presumption is that a person participating in an apprenticeship program receives education and work-based learning opportunities in the same setting as non-disabled participants to avoid unnecessary and unjustified isolation and segregation.

Apprenticeship program administrators should not enter into contracts or other arrangements with vendors that deny equal employment opportunities. It would be inappropriate to enter into a contract with a firm that screens out or tends to screen out qualified applicants with disabilities who, with or without reasonable accommodation, can perform essential job functions.

Strategic Plans and Management by Objectives

Apprenticeship program administrators should¹⁷ adopt strategic plans to encourage and promote diversity and inclusion by creating a discrimination-free environment, adopting measurable goals (what gets measured gets done), addressing barriers to equal opportunity by reviewing personnel processes, adopting specific and practical steps to address barriers (e.g., targeted outreach and recruitment), and implementing monitoring and reporting to ensure continuous improvement.

Collaboration

Trade, industry, and employer groups and associations; companies; unions; joint labor-management organizations; certification bodies; educational institutions (e.g., public schools, universities, and community colleges); state and local government agencies or entities; nonprofit organizations; and a consortium or partnership of entities such as those listed above should collaborate to create new, industry-driven apprenticeship solutions that address the needs of a diverse population:

- Under the Rehabilitation Act, as amended, 15 percent of vocational rehabilitation funds support preemployment transition services to prepare youth for postsecondary education and employment. Section 113 requires that pre-employment transition services, including work-based learning experiences, be available to students with disabilities in need of such services who are eligible or potentially eligible for vocational rehabilitation services. Work-based learning experiences include in-school or after-school opportunities or experiences outside the traditional school setting (including internships), that are provided in an integrated environment
- Under Title I of WIOA, at least 20 percent of WIOA youth formula funds allocated to local areas must be used to provide paid and unpaid work experiences for youth, including pre-apprenticeship and other types of on-the-job training and shadowing. Eligible training providers deliver these services in local communities, which can be accessed through local American Job Centers. WIOA also requires coordination of services to promote career readiness, secondary school completion, entry into postsecondary education, and postsecondary credentials aligned with in-demand industry sectors. Additional allowable activities include entrepreneurial skills training and financial literacy education.
- The Office of Disability Employment Policy within the US Department of Labor has awarded a contract through its AIM (Apprenticeship Inclusion Models) initiative to guide four pilot projects (Amazon; Microsoft; the Healthcare Career Advancement Program, or H-CAP; and the Industrial Manufacturing Technician Apprenticeship Program, or IMT) focused on apprenticeship opportunities for youth and adults with disabilities in high-growth industries and well-paying careers.

Preapprenticeship Programs

Preapprenticeship programs—including programs specifically applicable to people with disabilities (e.g., IDEA and Title I of the Rehabilitation Act) or programs that include people with disabilities among their beneficiaries (e.g., Title I of WIOA)—comprise the following:

- training and curricula that align with the skill needs of employers in the state or regional economy
- access to educational and career counseling and other supportive services directly or indirectly

- hands-on, meaningful learning activities connected to education and training activities (e.g., exploring career options) and understanding how the skills acquired through coursework can be applied toward a future career
- opportunities to attain at least one industry-recognized credential
- a partnership with one or more apprenticeship programs that helps place people who complete preapprenticeship programs in apprenticeship programs

Examples of State Policies

State-level policy also affects disability inclusion in apprenticeship programs with efforts that align opportunities with regional employers' needs and local economic realities.

In an education system, work-based learning is essential to career development, which is implemented in a high-quality manner to produce high school graduates ready for college or a career. These experiences involve various experiences—from site visits and job shadowing to paid and unpaid internships and service learning—and can be available in both in-school and out-of-school settings. Work-based learning experiences for youth with disabilities include targeted efforts with employers who are knowledgeable about disability and capable of designing experiences for and accommodating a disabled student's needs.

But youth with disabilities, particularly those with significant disabilities, have less access to work-based learning experiences, even though paid employment and work experiences are evidence-based predictors¹⁸ of success in postsecondary education, employment, and independent living.

In 2016, the National Conference of State Legislatures and the Council of State Governments published *Work Matters: A Framework for States on Workforce Development for People with Disabilities* (Whitehouse, Ingram, and Silverstein 2016). This report finds that state policymakers are expanding opportunities for youth with disabilities to participate in work-based learning experiences by adopting strategies such as the following:

- fostering the establishment of business-led advisory groups to guide the development of inclusive work-based learning experiences that are attractive to both businesses and young adults
- providing incentives for business intermediaries to offer guidance (i.e., technical assistance) around the Americans with Disabilities Act, the Fair Labor Standards Act and other laws, to businesses participating in work-based learning experiences
- supporting public-private partnerships that facilitate employer recruitment and student placement in meaningful, work-based learning opportunities

Examples of state policies in action include the following:

In 2016, **Pennsylvania** enacted the Work Experience for High School Students with Disabilities Act to facilitate job and career development between local educational agencies and public and private employers to ensure high school students with disabilities can transition into competitive integrated employment. The law also authorizes arrangement for work-based learning experiences.¹⁹

Illinois has implemented a career development process with three phases: exploring, planning, and transitioning.²⁰ Helping students access work-based learning opportunities is an important part of the transition stage, which begins in 10th grade.

The **Kentucky** Department of Education released a guide for schools to use when implementing high-quality work-based learning initiatives.²¹ Work-based learning is outlined in 704 KAR 3:305, Minimum Requirements for High School Graduation, which encourages schools to engage the disengaged and stretch the learning of every student through credit-bearing work-based learning.

South Carolina's career readiness program emphasizes internships, job shadowing, mentoring, work-based learning,²² and related classroom instruction.

In the early 1990s, **Wisconsin** implemented a youth apprenticeship program that is now the nation's largest apprenticeship opportunity for high school students.²³ The program consists of two years in which juniors and seniors participate in work-based learning and related coursework, often for college credit.

The **Colorado** Department of Education developed a detailed transition toolkit to guide school personnel and families through transitioning students with disabilities from high school into college or a career.²⁴ The toolkit emphasizes not only the importance of hands-on occupational learning but the extensive preparation needed to help students with disabilities thrive in a work environment.

At the time of the report's publication, other states were considering bills focused on the following:

- establishing preapprenticeship programs for high school students
- exploring ways to diversify apprenticeship programs with a focus on disability status, using affirmative action plans
- allocating funding for regional apprenticeship development grant pilot programs in high-growth industries
- setting standards for equality and fair access to high-quality work-based learning experiences for, among others, students with disabilities

Examples of DOL-Funded Inclusive Apprenticeship Initiatives

The Department of Labor offers grant opportunities to advance the Executive Order on Expanding Apprenticeships in America and to promote and expand apprenticeships in new industries to enable more Americans to obtain family-sustaining careers. These investments support states, industry and equity partnerships, outreach, and technology modernization to expand apprenticeship and preapprenticeship opportunities. States use these funds to increase inclusion of people with disabilities in apprenticeship programs by implementing and adopting sound state-level policies and supporting inclusive programs.

The examples below compiled by the Department of Labor's Office of Disability Employment Policy's State Exchange on Employment and Disability initiative indicate the different ways this is being achieved (State Exchange on Employment and Disability 2019):

The Exceptional Family Center's **Next Step Job Training and Employment Partnership** program provides evidence-based, market-driven, and needs-based career development courses to people with disabilities. Funded in part by DOL's TechHire Partnership grant, this collaboration with community partners expands access to IT and health care training for local young people with autism spectrum disorders. Services offered include individualized training, coaching, on-the-job training, and a soft skills boot camp. The program is supported by several large employers, such as Wells Fargo and Dignity Health, and leveraged additional funds through philanthropic and private contributions. More details are available at "Our Services," Exceptional Family Center, accessed October 10, 2019, <https://www.kernefc.org/programs-and-services.html>.

The OpenTech LA Regional Collaborative Program, a DOL American Apprenticeship Grant Initiative awardee, partners with employers to provide registered apprenticeship programs in the technology industry in such fields as programming, web development, cybersecurity, and health IT. One of its partners, Exceptional Minds Studio, a computer animation studio, offers a multiyear training program for young adults with autism. Participants receive customized instruction in visual effects and digital animation, certifications, and work readiness courses to prepare them for successful careers specific to the industry. For more details, see US Department of Labor, *American Apprenticeship Initiative: Grantee Success Stories* (Washington, DC: US Department of Labor, 2017).

The **Managing the Talent Pipeline in Health Information** apprenticeship program, led by the AHIMA Foundation, and funded through the American Apprenticeship Initiative. Working with a range of health care employers, such as Pfizer and the Seattle Children's Hospital, the program uses competency-based, on-the-job apprenticeship training in health care information to help recent college graduates and others obtain well-paying health care data management careers. The medical coding apprenticeship features a training track for high-functioning people with autism spectrum disorders.

For more details, see US Department of Labor, “American Apprenticeship Grant Award Summaries” (Washington, DC: US Department of Labor, n.d.).

The Wilson Workforce and Rehabilitation Center Manufacturing Technology Training Preapprenticeship Program is supported through state and regional partnerships including funding from the Career Pathways for Individuals with Disabilities grant and the Shenandoah Valley Workforce Development Board’s Valley to Virginia Apprenticeship Initiative, a DOL-awarded grant to expand registered apprenticeship in Virginia and develop apprenticeship pathways for underrepresented populations, including people with disabilities. Preapprenticeships prepare people to enter into employment and to succeed in a company’s registered apprenticeship program. The training incorporates core skills required for manufacturing and warehouse occupations and includes the soft skills employers demand, such as communication, problem solving, flexibility, and teamwork. More details are available at the website for Virginia Career Works, Shenandoah Valley Region at <https://vcwvalley.com/>.

The Youth Policy Institute’s LA Promise Zone TechHire project serves people with disabilities in Los Angeles County who are at least 17 years old, are out of secondary school, and are unemployed, dislocated, or underemployed for placement in the technology industry with a focus on high-growth occupations. This DOL grantee also serves veterans, out-of-school youth, and unemployed and underemployed residents. For clients with disabilities, case managers from YouthSource Center and WorkSource Center work with the California Department of Rehabilitation and such agencies as the Greater Los Angeles Agency for Deafness for recruitment. The case managers also refer people to the California Department of Rehabilitation Services that includes vocational rehabilitation services. More details are available at the website for the LA Promise Zone at <http://www.lapromisezone.org/>.

Disability-Inclusive Apprenticeship in Action

Helping Tech Companies to Diversify: Apprenti

The IT industry is catching on to the merits of the apprenticeship model and how it can help businesses both fill workforce needs and bring diverse and underrepresented populations, including people with disabilities, into their workplaces. One organization working in this space is Apprenti, which partners with talent-hungry tech employers to design apprenticeship programs that help build a reliable workforce pipeline that includes underrepresented groups. The IT space in particular is focusing on people on the autism spectrum, who often have the skills (e.g., high attention to detail and the ability to detect patterns) needed to excel in such jobs as computer coding and software development.

On-the-job training is a tried-and-true practice on building expertise. The young people we work with are diverse. They come from our underserved and underrepresented communities.

—Edison Freire, Former Director, Educational Technology, School District of Philadelphia

Answering a Calling to Work with Computers: Derek Schwartz

People with all sorts of disabilities can excel in IT jobs, and Derek Schwartz is just one example. Derek is deaf and grew up in Philadelphia and just “always liked computers.” Several years ago, he kick-started his career with an apprenticeship with the Urban Technology Project in Philadelphia, a private-public partnership between the city’s school district, a nonprofit called Communities in Schools, and area employers. During his apprenticeship, he worked for two years at Central High School, providing tech support to students and staff. After completing the program, he went on to work for the Children’s Hospital of Philadelphia.

The apprenticeship model will work in almost every context—wherever you have a workforce need, wherever you have a gap, whether we’re talking about a skills gap or retention issues.

—Todd Estes, Director, Apprenticeship Institute, Tidewater Community College

Producing a “Sweet” Outcome: Chris Hall

Chris Hall is an industrial manufacturing technician apprentice at the Hershey plant in Stuarts Draft, Virginia, where he works on the production line. Chris’s path to employment at Hershey’s started when he enrolled in the Wilson Workforce and Rehabilitation Center’s Manufacturing Technology Training program, through which he obtained industry-recognized credentials. Before seeking assistance through the Virginia Department for Aging and Rehabilitative Services, Chris was unemployed and receiving disability benefits. In fact, his disabilities—including anxiety, depression, and attention deficit hyperactivity disorder—caused him to rarely leave home for nearly 10 years after high school. Supported by Career Pathways for Individuals with Disabilities and Valley to Virginia grants, the Manufacturing Technology Training program recently earned Department of Labor recognition for meeting the requirements for preapprenticeship training.

I would say to any employer that had any hesitation about hiring someone from an apprenticeship program with a disability, or, quite frankly, anybody with a disability, that it's the energy and excitement that someone brings to the job, and the desire to learn really should be your only focus, and that's worked out for us tenfold.

—Melanie Harris, Chief Information Officer, School District of Philadelphia

Paving a New Career Path: Joanne Hager

Although opportunities are increasing in fields not traditionally associated with apprenticeships, programs still flourish in the traditional trades and can offer not only a career start but a path back after onset of disability. Joanne Hager was a firefighter for many years. She lost sight in one eye in 1997 and later developed decreased vision in the other, stemming from multiple sclerosis. She lost her job. She then worked as a caregiver but couldn't support her family. One day, she saw a flyer about a nonprofit that hires apprentices in construction. She started on the track of heavy construction laborer. After completing her apprenticeship, a construction and masonry company hired her. Today, she's an instructor for the Minnesota Laborers Training Center. This successful second career all started with an apprenticeship, which she says truly transformed her life.

Notes

- ¹ Rehabilitation Research and Training Center on Disability Statistics and Demographics, *2018 Annual Disability Statistics Compendium* (Durham, NH: University of New Hampshire, Institute on Disability, 2019).
- ² Individuals with Disabilities Education Act, Pub. L. No. 101-476, 104 Stat. 1142 (1990).
- ³ "Title 34, Subtitle B, Chapter III, Part 300," Electronic Code of Federal Regulations, last updated October 7, 2019, https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title34/34cfr300_main_02.tpl.
- ⁴ Rehabilitation Act of 1973, amended through Pub. L. No. 114-95, 87 Stat. 355 (2015).
- ⁵ "Title 34, Subtitle B, Chapter III, Part 361," Electronic Code of Federal Regulation, last updated October 7, 2019, https://www.ecfr.gov/cgi-bin/text-idx?SID=f55168c79cda9f776496983fc95f223c&mc=true&tpl=/ecfrbrowse/Title34/34cfr361_main_02.tpl.
- ⁶ Workforce Innovation and Opportunity Act, Pub. L. No. 113-128, 128 Stat. 1425 (2014).
- ⁷ Workforce Innovation and Opportunity Act, 81 Fed. Reg. 56072 (August 19, 2016).
- ⁸ Implementation of the Nondiscrimination and Equal Opportunity Provisions of the Workforce Innovation and Opportunity Act, 81 Fed. Reg. 87130 (December 2, 2016).
- ⁹ Americans with Disabilities Act of 1990, amended through Pub. L. No. 110-325, 104 Stat. 327 (2009), title 42, chapter 126.

- ¹⁰ “Title 29, Subtitle B, Chapter XIV, Part 1630,” Electronic Code of Federal Regulations, last updated October 7, 2019, https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title29/29cfr1630_main_02.tpl.
- ¹¹ Rehabilitation Act of 1973, 29 U.S.C § 793 (1973).
- ¹² “Title 41, Subtitle B, Chapter 60, Part 60-741,” Electronic Code of Federal Regulations, last updated October 7, 2019, https://www.ecfr.gov/cgi-bin/text-idx?SID=039bd88dc35f767eaacdbb3530c41e5c&tpl=/ecfrbrowse/Title41/41cfr60-741_main_02.tpl.
- ¹³ “Apprenticeship: History and Fitzgerald Act,” US Department of Labor, Employment and Training Administration, last updated March 4, 2019, <https://www.doleta.gov/OA/history.cfm>.
- ¹⁴ “Title 29, Subtitle A, Part 30,” Electronic Code of Federal Regulations, last updated October 7, 2019, https://ecfr.io/Title-29/cfr30_main.
- ¹⁵ Exec. Order No. 13,801, 82 Fed. Reg. 28229 (June 15, 2017).
- ¹⁶ Molly E. Conway, acting assistant secretary of labor, “Training and Employment Notice No. 03-18, Change 1: Creating Industry-Recognized Apprenticeship Programs to Expand Opportunity in America,” directive to state governors, state labor commissioners, state apprenticeship agencies, state workforce agencies, and state and local workforce board chairs and directors, June 25, 2019, https://wdr.doleta.gov/directives/corr_doc.cfm?docn=7448.
- ¹⁷ Sponsors of registered apprenticeship programs are required to adopt affirmative action plans in accordance with 29 CFR part 30; whereas it is considered a best practice for other apprenticeship programs to adopt strategic plans.
- ¹⁸ “Youth: The Guideposts for Success,” US Department of Labor, Office of Disability Employment Policy, accessed October 9, 2019, <https://www.dol.gov/odep/categories/youth/index-guide.htm>.
- ¹⁹ H.B. 400, 2015 Leg., Reg. Sess. (Pa. 2015).
- ²⁰ “Illinois Career Development Resources: Career Pathways,” University of Illinois at Urbana-Champaign, College of Education, Office of Community College Research and Leadership, accessed August 29, 2019, <https://ocrl.illinois.edu/past/career-development/illinois-career-development-resources#cp>.
- ²¹ “Work-Based Learning,” Kentucky Department of Education, accessed August 29, 2019, <https://education.ky.gov/CTE/cter/Pages/WBL.aspx>.
- ²² “Motion as Amended and Adopted by the EOC on December 11, 2017,” South Carolina Education Oversight Committee, accessed August 29, 2019, <https://www.eoc.sc.gov/sites/default/files/Documents/Amended%20and%20Approved%20Motion%20Career%20Ready.pdf>.
- ²³ See the website for the Wisconsin Department of Workforce Development at <https://dwd.wisconsin.gov/youthapprenticeship/>.
- ²⁴ “Charting a Course for the Future—A Transition Toolkit,” Colorado Department of Education, last updated November 16, 2018, https://www.cde.state.co.us/cdesped/transition_tk.

References

- State Exchange on Employment and Disability. 2019. *Apprenticeship Resources for State Policymakers*. Washington, DC: US Department of Labor, Office of Disability Employment Policy.
- Whitehouse, Elizabeth, Kyle Ingram, and Bobby Silverstein. 2016. *Work Matters: A Framework for States on Workforce Development for People with Disabilities*. Lexington, KY: Council of State Governments; Denver: National Conference of State Legislatures.

Additional Resources

These additional resources from the Department of Labor provide assistance to those seeking to expand apprenticeship as a career pathway for all workers, including those with disabilities.

- **The Improving Transition Outcomes of Youth with Disabilities by Increasing Access to Apprenticeship Opportunities issue paper** examines the role apprenticeship can play in increasing opportunities and improving outcomes for youth with disabilities as they enter the workforce. For more details, see Irene Lynn and Dominique Mack, *Improving Transition Outcomes of Youth with Disabilities by Increasing Access to Apprenticeship Opportunities* (Washington, DC: US Department of Labor, Office of Disability Employment Policy, 2008).
- **The #ApprenticeshipWorks Guides** introduce youth, educators, service providers, and businesses to the benefits and opportunities of inclusive apprenticeship.
 - » Office of Disability Employment Policy (ODEP), “Apprenticeship Works for You: A Guide for Individuals Exploring Inclusive Career Paths” (Washington, DC: US Department of Labor, ODEP, n.d.).
 - » ODEP, “Apprenticeship Works for Inclusion: A Guide to Helping People with Disabilities Explore Inclusive Career Paths” (Washington, DC: US Department of Labor, ODEP, n.d.).
 - » ODEP, “Apprenticeship Works for Business: A Guide to Building Inclusive Workplaces” (Washington, DC: US Department of Labor, ODEP, n.d.).
- **Apprenticeship Toolkit:**
 - » Introduction to the Apprenticeship Toolkit: Youth with Disabilities Entering the Workplace through Apprenticeship: dol.gov/odep/categories/youth/apprenticeship/ODEPIntro.pdf.
 - » Module 1: Understanding Apprenticeship Basics: dol.gov/odep/categories/youth/apprenticeship/ODEP1.pdf.
 - » Module 2: Preparing Youth and Young Adults for Apprenticeship Programs: dol.gov/odep/categories/youth/apprenticeship/ODEP2.pdf.
 - » Module 3: Increasing the Participation of Young Adults with Disabilities in Apprenticeship Programs: dol.gov/odep/categories/youth/apprenticeship/ODEP3.pdf.
 - » Module 4: Establishing New Apprenticeship Programs: dol.gov/odep/categories/youth/apprenticeship/ODEP4.pdf.
 - » Module 5: What Apprenticeship Employers Need To Know About Working with Young Adults with Disabilities: dol.gov/odep/categories/youth/apprenticeship/ODEP5.pdf.
 - » Module 6: Looking To Future Opportunities In Apprenticeship: dol.gov/odep/categories/youth/apprenticeship/ODEP6.pdf.
- **Training and Employment Notice No. 04-15** provides information and resources on promising strategies to promote the inclusion of youth and adults with disabilities in registered apprenticeships and preapprenticeship. For more details, see Portia Wu, assistant secretary of the Employment and Training Administration, and Jennifer Sheehy, acting assistant secretary of the Office of Disability Employment Policy, “Expanding Registered Apprenticeships and

Preapprenticeships to Create a Pathway to Good Middle Class Jobs for Youth and Adults with Disabilities,” notice to state workforce agencies and others, July 31, 2015, https://wdr.doleta.gov/directives/corr_doc.cfm?DOCN=6762.

- **Training and Employment Notice No. 10-09** describes an issue paper and toolkit on improving transition outcomes for youth and young adults with disabilities through apprenticeship. For more details, see Jane Oates, assistant secretary of the Employment and Training Administration, and Kathleen Martinez, assistant secretary of the Office of Disability Employment Policy, “Toolkit and White Paper on Improving Transition Outcomes of Youth with Disabilities through Apprenticeship,” notice to state workforce agencies and others, September 21, 2009, https://wdr.doleta.gov/directives/corr_doc.cfm?DOCN=2805.
- **ODEP’s self-disclosure web page** focuses on youth, disclosure, and the workplace to support self-disclosure, learning rights, and responsibilities under the law, along with resources. For more details, see “Youth, Disclosure, and the Workplace: Why, When, What, and How,” US Department of Labor, Office of Disability Employment Policy, accessed October 10, 2019, <https://www.dol.gov/odep/pubs/fact/ydw.htm>.
- The **Employer Assistance and Resource Network on Disability Inclusion** provides a list of resources that help employers find qualified job seekers with disabilities, including information on state and local programs, and job-posting sites targeted to candidates with disabilities and veterans. For more details, see “Finding Candidates with Disabilities,” Employer Assistance and Resource Network on Disability Inclusion, accessed October 10, 2019, <http://www.askearn.org/topics/recruitment-hiring/finding-candidates-with-disabilities/>.
- The **Job Accommodation Network** is the leading source of free, expert, and confidential guidance on workplace accommodations and disability employment issues, and offers employers assistance with information on reasonable accommodations for apprentices to perform their jobs and maximize their productivity. For more details, see the website for the Job Accommodation Network at <https://askjan.org/>.

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State Exchange on Employment and Disability initiative, directed out of the Office of Disability Employment Policy. Albanese has received several awards, including the secretary of labor's prestigious Award of Excellence.

Apprenticeship and Reentry from Prison

Veronica Cano and Paul Knepper

Apprenticeships have received increased attention as a high-quality training model. They combine paid work with structured on-the-job training and classroom-based technical instruction. In a recent report, Hecker and Kuehn (2019) discuss the role of apprenticeship in the criminal justice system and how apprenticeships operate in prisons.

In this chapter, we consider reentry from prison and how apprenticeship can help people reintegrate into the workforce in their local communities. The unprecedented increase in the prison population led to an awareness that virtually all will return to society. Without effective programs and a rationale for delivering them, most of these people are likely to return to prison.

Our discussion begins with reentry and the challenges people face upon returning to society. Next, we discuss the academic literature concerning work programs, including evaluation research, theoretical perspectives, and emerging work on desistance. Finally, we examine the role of apprenticeships in view of the issues and findings. Given what we know about why at least a portion of work programs are effective, the apprenticeship model can make an important contribution to a comprehensive response.

The Problem of Reentry from Prison

In 1967, the President's Commission on Law Enforcement and the Administration of Justice released its now-famous graph of America's criminal justice system. The graph charted cases moving through the system. It began on the left-hand margin, with the decisions of police officers, prosecutors, courts, and corrections officials, and multiple routes, depending on the type of offense. For people en route to the penitentiary, the graph indicated parole as a possibility but otherwise culminated on the right-hand margin with the phrase "out of the system" (President's Commission 1967).

In 1967, the incarceration rate was about the same as it had been for most of the 20th century. The incarceration rate fluctuated around 110 per 100,000 people. But in 1973, the proportion of Americans in prison began to increase and continued to do so year after year. By 2001, the incarceration rate had reached 450 per 100,000 people, a level unprecedented in American history. "We do not currently know," Garland (2001, 6) observed, "what 'mass imprisonment' will mean for the society in which it develops, or for the groups who are most directly [a]ffected." From Garland's perspective, policymakers had "sleepwalked" into a social welfare dilemma of massive proportion. Mass imprisonment was not a policy that had been proposed, researched, costed, and debated. Rather, it emerged as an unforeseen

(but foreseeable) outcome of a series of decisions, including determinate sentencing, the war on drugs, three-strikes rules, and other tough-on-crime policies.

By 2003, a new term had attracted the attention of policymakers concerned with criminal justice: “prisoner reentry.” Petersilia (2003, 30) determined the number of people released from US prisons each year to be more than 600,000, or 1,600 a day. Unlike “reintegration” or “resettlement,” reentry referenced the inescapable fact that sending a large number of people to prison meant a large number of people returning to cities, regions, communities, and neighborhoods after leaving prison. Along with this was the realization that prisons do not reduce criminality, making community reintegration problematic. A high proportion of people have contact with law enforcement soon after release, and about half return to prison (Jonson and Cullen 2015, 526).

The reentry movement led to various programs in prison or in the community. The federal government allocated more than \$100 million to reentry. Programming efforts such as “boot camps, reentry courts, enhanced parole supervision, religious support, work release centers, community supervision techniques, risk-needs assessment, and employment programs” arose to facilitate successful reintegration into society (Lucken 2018, 3). The reentry movement also led to various classifications in corrections aimed at the transition from custody to society.

“Simply defined,” Petersilia (2003) explains, “[reentry] includes all activities and programming conducted to prepare ex-convicts to return safely to the community to live as law-abiding citizens.” Reentry became a change in philosophy, not merely an expansion of programs. It began with reconceptualizing prison at the point of admittance to an institution, or even sentencing, and extending beyond release into the community. That change in view has been characterized as a “game change” or “social movement” (Jonson and Cullen 2015, 521). The phrase reflects a shift in support for the opposite of mass incarceration. The new policy recognizes that most people return to their communities and that programs meeting their needs, delivered in prison or in the community, are essential to preventing reoffending (Lucken 2018, 2).

Challenges to Successful Reentry

Aside from basic needs, a significant factor in whether a person released from prison succeeds in society or returns to prison is employment (Nilsson 2003). Overcoming this challenge is difficult, as most people in prison have never experienced steady employment, have yet to complete education, or lack skills to obtain solid employment. Many entered prison with an irregular employment history resulting from limited education and job training. The experiences of people released from prison point to the difficulties in finding employment after release and highlight factors that increased their chances of successful employment. Visher, Debus-Sherrill, and Yahner (2011) found that a history of consistent work experience before incarceration, connections to employers before release, and established family relationships at release are positive indicators for employment upon reentry.

The difficulty of finding employment is one of several challenges. Upon release, people struggle with housing, health care, and family issues (Knepper 2007). Obtaining stable housing is integral to reintegration, but returning home is not an option for some because they did not have permanent housing before imprisonment, or they lost their housing while in prison. People in prison have greater medical and mental health problems than the general population because of their lifestyles, experiences in poverty, and drug use. Sun and coauthors (2018) found that black men are directly affected by the HIV/AIDS epidemic while experiencing disproportionate incarceration rates.

The challenges are multiplied for specific populations. As difficult as reentry is for everyone released from prison, African Americans encounter intensive barriers on release. Sun and coauthors (2018) highlight seven themes that arose in discussions with African Americans in prison and their reentry experiences before release and six months after release. Issues around intersectional identities and social positions, community violence, absence of informal social controls, employment issues, mental and physical health concerns, and relationships with law enforcement presented difficulties for reentry. Furthermore, racial factors also diminish the educational accomplishments of people who would otherwise be in a strong position to obtain stable employment upon release. Cooke (2004) interviewed 17 formerly incarcerated African American men in Seattle. She found that the time in prison had a greater impact on finding employment than having an education. Those with credentials, such as a bachelor's degree, found themselves working in minimum-wage jobs below their education or skill level, and those with the most success after release were self-employed.

Both men and women who have been in prison have greater mental and physical health problems than people who have not, but gender is important, as there are differing pathways that bring women into the criminal justice system. Women make up less than 10 percent of the prison population, but they constitute the fastest-growing population in prison, highlighting the need for gender-specific interventions (Frost, Greene, and Pranis 2006).

As women transition back into their communities, they have many of the same needs (e.g., safe housing, a legitimate income, prosocial networks, and help with substance use and mental and physical health issues) as their male peers. An additional struggle for women is reunification with their family, especially children. The separation from children and other family members is a significant factor in whether women return to prison (O'Brien and Young 2006).

In addition, women have fewer options for educational, vocational, and treatment programs while incarcerated and are often treated with traditional approaches that ignore or minimize their needs (Belknap 2001; Pollock 2002). Factors that diminish women's ability to find employment, such as childcare, co-occurring disorders, and low educational attainment, are compounded by policy issues that restrict them from jobs that involve children and health care (Spjeldness and Goodkind 2009, 322). In addition, federal policy that prohibits people who have been in prison from qualifying for Pell grants limits women's options for overcoming their socioeconomic disadvantages before release (O'Brien and Young 2006).

One important reentry strategy to support custodial parents is providing child care and considering parenting duties during treatment activities (Spjeldness and Goodkind 2009, 326). Successful programs are comprehensive and focus on gender-specific drug treatment, parenting and family preservation, training in employment and job skills, counseling to deal with past abuse and trauma, and help finding safe and affordable housing for children.

Research on Employment and Reentry

Program Evaluations

Most research has focused on job training, work release, and vocational education programs to reduce recidivism rates. During the 1990s, Saylor and Gaes (1992, 1997) published several reports from their evaluation of the Post-Release Employment Project within the federal prison system. They collected data on 7,000 people in prison, comparing those who participated in training and work programs with peers who did not take part, against a baseline of all other people in prison. Saylor and Gaes found that people with training had a substantial and significant effect on in-prison behavior and postprison employment and arrest rates.

Turner and Petersilia (1996) evaluated a work-release program in Washington State that allowed people to enter the community for work training and experience. Of the 965 people in the sample, 544 were “successful” or did not incur a program infraction or arrest and another 131 were “moderately successful” or had some infraction but was not removed from work release. Out of 1,100 tracked as part of the evaluation, less than 5 percent committed a new crime while on work release, and virtually all of those offenses were low-level offenses (Turner and Petersilia 1996, 161). The program prepared people for final release and facilitated adjustment to the community.

Wilson, Gallagher, and MacKenzie (2000) reviewed 53 experimental or quasi-experimental treatment-control comparative studies, including 33 evaluations of prison education, vocational, and work programs. They found that participants in work programs were less likely to return to crime than those who did not participate, cautioning that this conclusion rested on studies with weak methodological designs.

Seiter and Kadela (2003, 367) examined the literature to identify effective reentry programs, affirming the significance of employment: “Finding a job is often the most serious concern among ex-inmates, who have few job skills and little work history.” They analyzed the results of 32 evaluations of correctional programs that focused on the transition from prison to the community and programs that initiated treatment in a prison setting linked with a community program. They rated these studies based on methodology correlation between a program goal, an outcome, and a single point in time to random assignment versus comparison groups over a longer period. They concluded that the studies by Saylor and Gaes (1992, 1997) and Turner and Petersilia (1996) demonstrated vocational and work-release

programming to be effective in reducing recidivism and improving job readiness for people released from prison (Seiter and Kadela 2003, 374).

Theoretical Perspectives

As important as it is to determine *whether* job training programs lower recidivism rates, it is equally important to know *why* any particular program should lower recidivism rates. Jonson and Cullen (2015, 552) point out that most treatment programs fail, not only because they are poorly implemented but because they were poorly conceived. Two theoretical traditions drive evaluation research: individual change and social context.

Individual change. The individual change perspective has its origins in clinical psychology. Gendreau and Ross (1979) insisted that it was not enough to say whether a program was successful but that program success depended on individual characteristics. The most important factor was motivation, suggesting that programs need to employ cognitive and behavioral techniques. Numerous studies have shown that cognitive-behavioral programs most reliably reduce recidivism rates (Andrews and Bonta 1998). Cullen and Gendreau (2000) summarized this work as programs that attempt to restructure a person's distorted or erroneous cognition and help the person learn new adaptive skills.

From the individual change perspective, creating opportunities, whether in prison or in the community, is not enough because to be successful, people must want to change. MacKenzie (2006) contends that effective programs focus on individual-level change while ineffective programs provide opportunities in the community. But the conceptual limits of both treatment and punishment are not a consistent catalyst for change. Maruna (2001) maintains there needs to be a central motivating factor to prevent reoffending. Bazemore and Erbe (2003) suggest that community social capital can increase the likelihood of successful reintegration into society.

Social context. Many people who go to prison come from isolated inner-city communities that are often detached from the world of work. Worklessness is why some of these people wound up in prison in the first place. Chiricos (1987, 195) points out that studies of unemployment and crime that compared cities at the neighborhood level were more likely to turn up "milieu effects." High unemployment in a particular area of the city creates a climate of despair or hopelessness that has a criminogenic effect even for those who are not in the labor force, such as teenagers.

Wilson (1987) emphasized the difference between "unemployment" and "worklessness." Being unemployed does not necessarily mean "not working," detached from all economic activity. Many people who are officially unemployed engage in various kinds of paid work, including informal economies that derive an income. Regulation of social life in informal economies is less structured by expectations that require discipline and punctuality. Participation in the formal economy provides a framework and an anchor for social life. It creates an income, a coherent pattern for daily life, concrete expectations, and goals. Hard skills (e.g., literacy, numeracy, and mechanical skills) and soft skills (e.g.,

demeanor and conversation) are underdeveloped in workless neighborhoods, where projecting a tough demeanor and avoiding eye contact are key to survival yet hinder the transition to the working world (Wilson 1999).

Hagan (1993) proposed that a key factor in understanding crime and employment is “recognizing the social relations in which economic life is embedded.” There is a social structure to employment that involves socially embedded networks of contacts. Securing employment is important because of its potential to widen these networks and facilitate upward job mobility. A recent Colorado study confirmed Hagan’s insight. Pogrebin and coauthors (2014) interviewed 70 people on parole about the financial obstacles people face upon release from prison. Most often, people on parole had to rely on their families for help. The authors found a “stark contrast” between those who had help finding employment and housing and those who were trying to make it on their own. The research underlined the contribution of family and friends in securing employment (Pogrebin et al. 2014, 400–01).

Lynch and Sabol (2001) found a relationship between length of stay in prison, levels of family support, and program participation while incarcerated. Reentry populations are diverse and should have their needs identified before release to determine the level of community support. Community social capital can increase the likelihood of a successful transition to community life. Life course research has documented the significance of conventional commitment to formal roles in families, work, and other social institutions (Laub and Sampson 2001). Family support is vital to finding a coherent pattern for daily life through employment and as community members. Laub and Sampson (2001) proposed that the active ingredient in education and work programs may be the social bonds that develop between teachers and the people they teach in prison.

Furthermore, release areas are concentrated in working-class neighborhoods, which can have negative consequences for people reentering the community who need employment and earnings to avoid reoffending. Although family support is necessary social support, prosocial networks that lead to legitimate employment are equally important.

Desistance

Most research concerning the relationship between employment and crime considers whether unemployment is the cause of or a correlate leading to the *start* of criminal offending. Desistance views the question from the standpoint of how and why people *stop* offending. Laub and Sampson (2001) introduced the concept of desistance from crime across the life course. In their secondary data analysis of men born in Depression-era Boston, they tracked people through age 45 and found that people turned away from criminality for good after key “turning points” in their lives. Central to this was job stability, where having a stable job between ages 17 and 25 reduced the risk of criminal offending between ages 25 and 32.

To explain this, Laub and Sampson (2001) focused on social factors and emphasized the importance of structured, regular activities and informal social controls. Social networks provide structure and opportunities for law-abiding behavior and allow people to insulate themselves from the deviant environment. A key element in the life course perspective is change over time rather than the initial moment of onset. People who recidivate tend to lack the connective structures that help them sustain a crime-free lifestyle. Desistance originates from forming new social bonds, such as marriage and employment, and life routines that are incompatible with an offending lifestyle. The authors did not claim that any form of employment would be a turning point but would contribute to desistance through the development of prosocial identities. Cid and Martí (2017) found that maintaining desistance involves the commitment of a new role (other than being a person who commits crimes), attachment to that role and people who support that role, and daily routines that support the new role, such as employment.

Bazemore and Erbe (2003) highlight the relevance of informal social controls and informal social support as factors influencing the likelihood of desistance. Based on Maruna's (2001) work on identities, Bazemore and Erbe suggest that a successful transition from skill development to employment to desistance must include a means of building social capital. Developing a new identity as a law-abiding citizen is similar to developing a new identity as a person who commits crimes. Through roles in work, family, and community contexts, the person can try out new prosocial identities (Uggen, Manza, and Behrens 2004). Conversely, society can form a new impression in a person's new role as a spouse, worker, or community member.

Giordano, Cernkovich, and Rudolf (2002) proposed that desistance begins when people see personal transformation as a possibility. People are presented particular circumstances, or "hooks," such as a good job or educational program that propels them toward change. The idea of a good job or hook explains research in Norway where Skardhamar and Savolainen (2014, 270–71) studied "crime-prone" people with an "unstable work history who managed to get stable jobs." They found that employment fostered desistance from crime but only for less than 2 percent of the sample. For most, the causal order seemed to be the reverse of expectations: stable employment followed desistance but did not lead to desistance. The authors surmise that their inability to find more support for job stability had to do with the difference between "good" and "bad" jobs (Skardhamar and Savolainen 2014, 287).

Additionally, there is the reinterpretation of previous illegal behavior. Maruna (2001) argued that desistance requires people to reformulate their identity. After analyzing interviews with desisters and persisters, he concluded that desisters tended to rewrite their life stories in which they viewed their true selves as people who did not commit crimes. They separated themselves from their past, created a redeeming script, and expressed the desire to use their experience to benefit others. Maruna (2001) observed that drug treatment and employment stability were important parts of this transformation. Employment opportunities embedded within reentry communities facilitate this transition and allowed people to practice their new identity in the community where they were released. Building social capital through informal social controls is necessary to build resilience, as most people reentering the

community do not reintegrate by surveillance, threats of court sanctioning, or intervention services but through a change in community thinking and the value in their skill sets upon release (Clear and Karp 1999).

The Role of Apprenticeships

Accounting for what we know about work programs, particularly why they should be effective, we can say that apprenticeships can help people transition from being a person in prison to being a person in a stable job. But these programs must include certain elements to ensure their efficacy.

Apprenticeships deliver a powerful package of training, education, and paid work. Yet it is not enough to merely extend opportunities for training, education, and work. Motivation matters, so it does not make sense to expect everyone to benefit equally from a work assistance program (Bushway 2003). People who have not decided to desist from law breaking will not benefit from access to a job or increased skills. If the goal is to provide an opportunity for turning away from crime, the program needs to focus on motivating people for change rather than simply providing an income or job skills.

Furthermore, people are not released into the isolation of a cell and the closed society of an institution; rather, they are released into the social contexts of community, family, employment, and citizenship. Social networks lead to employment for many workers. Apprenticeships provide access to the world of work through the network they open up for people returning from prison. Without these networks, people fall back on their old networks and often back to offending.

The bond that develops between workers and their supervisors may be the “active ingredient” in the success of employment programs (Laub and Sampson 2001). Employment provides an income, a structure for spending time, and a potential new identity. Success starts with the relationship between the worker and the supervisor. Apprenticeships address this through relationship building between the apprentice and the mentor.

Technical training in prison can lead to hands-on practice upon reentry (Sokoloff and Schenck-Fontaine 2017). But developing apprenticeships outside prison has several advantages. Prison-based work programs aim to manage the prison population by helping with prison management through daily service delivery (e.g., laundry and food) and offer a way for people in prison to give something back. Though these goals are not contrary to reentry, they do not necessarily address reentry challenges. As Bushway (2003, 3) points out, work programs leading to rehabilitation are difficult to operate in an institutional environment where the institution’s goal (managing the prisoner population) trumps the program’s goal (successful reentry).

People who have been to prison have different experiences than others seeking employment. They face the challenge of stigma; restrictions on employment, housing, and welfare benefits; and overlapping mental and physical health issues. Yet for certain reentry populations, these challenges are

more intense and specific. Apprenticeships should consider differences by race or ethnicity or gender. To address the overrepresentation of black people going to and being released from prison, Marbley and Ferguson (2005) have called for systematic partnerships with businesses, universities, faith groups, and communities that have a concentration of people returning from prison.

Women have unique needs upon reentering society. Despite these needs, studies have found that women are stronger candidates for apprenticeships than men (Miller, Miller, & Barnes 2016). For instance, many women released from prison are parents to underage children and have sole custody. This makes them more amenable to treatment, resulting in lower recidivism rates. The strong bond to family lends itself to forming partnerships with prosocial networks that provide support.

In addition to community acceptance, people released from prison must contend with employer reservations. Although emphasis has been placed on the difficulties people have securing employment after prison, not much has been written about why employers should hire them (Gill 1997). Part of the policy response to employment after prison should involve finding ways to overcome whatever reservations employers have, or believe they have, in hiring people released from prison.

Conclusion

Perhaps the most compelling reason for including apprenticeships in the programmatic response to reentry from prison is the unique resource apprenticeships provide—in combining paid work, on-the-job training, and classroom instruction—to allow people to write a new life story. For this, and for other reasons we've discussed, apprenticeships should be explored.

Nevertheless, reentry is a big problem, and apprenticeships are not the absolute solution. The number of people needing assistance in rejoining society and the range of issues for which they need assistance are too extensive for a single program. Realistic goals for programs should be narrow, achievable, and measurable (Turner and Petersilia 1996, 162). Apprenticeship programs should not assume the functions of other institutions, such as educational institutions and welfare agencies. Further, recidivism is not the most important measure in reentry programs. The bigger goal is not whether a person avoids getting into trouble during, or few months after, a work program. Rather, it's about stable employment and an increasingly diminished capacity for criminal activity. Evaluations of apprenticeship programs, for the purpose of reentry, should focus on whether they provide stable employment and how much stable employment reduces criminal activity.

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Retraining and Retaining Older Workers

Andrew Sezonov and Nicholas Wyman

The conversation about retirement age, an aging population, and what to do postretirement has been going on as long as we can remember, and the debate is likely to continue as our life expectancy keeps increasing.

To say humankind has evolved over the past 100 years is an understatement. At the turn of the last century, a person's working life was such that few lived to collect a pension at age 55, and if they did, few lived long beyond pension age. Now, most people live for decades past the retirement age of 65. We are prolonging the human life span by roughly three months *every year*. As this evolution continues, this question emerges: If we have the potential to keep living longer and lead more productive lives, what are we to do with those extra years?

The Japanese get the gold medal for life expectancy, at 85.8 years in 2019. They also get the gold medal for keeping workers engaged well into their seventh and eight decades. Seventy-five- or 80-year-old workers do not raise eyebrows like they would in many other developed nations, as Japanese government policy directions ensure the typical corporation has a career pathway to accommodate people ages 60 and older.

An older worker might not work the same number of hours or have the same management responsibilities as his 40-year-old self did, but the Japanese government recognizes that keeping workers engaged and productive helps meet broader social policy objectives. Other nations would do well to learn from their example.

We spoke with Australian businessman Simon McKeon about the challenges of engaging, retraining, and retaining older workers. McKeon is an Australian lawyer, philanthropist, and sportsman and is the current chancellor of Monash University.

McKeon's work has given him deep knowledge about health policy and outcomes and a personal interest in how national health system outcomes compare with life expectancies in different countries. He had just delivered a major address to the Strategic Review of the Commonwealth Government's National Health and Medical Research Council when we spoke with him, so he had a lot of knowledge about the social implications related to an aging population.

McKeon started thinking about retirement issues in the 1990s when he learned about a large accounting firm with a compulsory retirement age of 53. He felt that this policy didn't make sense because the firm had invested millions of dollars in screening and hiring staff as young graduates, continually training and improving their skills over the next few decades, and then, at what many would call the prime of their life, showing these skilled people the door. "Honestly, it didn't make sense to me at all. It was wrong from a business perspective and from the individual's perspective," said McKeon.

In his view, the debate isn't progressing in the right direction. "In the last few years, politicians and leaders have been saying their citizens won't have enough to fund retirements and people therefore will have to work longer. It's self-evident that if people are going to be retired for a longer period then they will need more money, but it's a very negative way of debating this issue. The whole debate needs to be reframed differently," McKeon lamented. "I honestly think this is just a gaping hole, and I just don't understand how there is this huge dynamic in the western world of baby boomers just rushing into retirement. This is something that is not being dealt with seriously. I don't know many people who are 50 and looking forward to turning 55 and spending every day on the beach. There are a lot of people who want to have a different pace of life, but I don't run into many who are looking forward to just having a perpetual holiday."

McKeon believes that too many productive people are being forced into early retirement to nobody's benefit: "I don't think the world of business has moved on much at all from retiring productive people in their prime. It is interesting because businesses are usually very good at grasping and responding to social trends. For example, look at how we have broached the topic of gender equality. The workplace world is a very different place for women compared to 30 years ago. It's a work in progress, and I think we are far from perfect, but we broached it and overall have responded reasonably well. But when I think about what we are doing in the area of retaining and retraining older workers, the conversation seems to have gone backwards."

We are stuck in the past. If workers feel they can work part time or full time after age 60, the business world not only needs to but must strive to accommodate this growing segment of our workforce.

We know from experience that older workers are subjected to several unfounded myths: productivity declines with age; older workers lack the drive, energy, and knowledge of the latest information technology packages; or investing in training and reskilling older workers delivers little commercial benefit as they will retire soon. This common and narrow what's-the-point? attitude overlooks the fact that return on investment for training is not guaranteed for *any* employee: the majority of Generation Y and millennial workers expect to stay in their jobs less than five years.

Shrewd human resources managers and general managers always ask fundamental questions: How do we get the best out of our employees? How can we reskill them? What's the most productive or rewarding career path for them?

McKeon sees the aging Australian population as an opportunity: "Sure, we will be spending more on health care and more on aged care, but that's only one side of the ledger. The opportunities for business to continue to upskill and develop older workers is enormous. Learning new skills and brushing up on skills should not be seen as something only for an aspiring manager; it should be a widespread expectation for all employees across an organization."

“What a huge opportunity this represents for business and the individual who wants to fill their working lives with hope and opportunity and engagement.” McKeon believes astute employers will soon reconsider the true cost, in lost skills and productive capacity, of retiring people early and will think more broadly about who can be productive in their workforce.

How Do Older and Younger Workers Relate in the Workplace?

There has been a lot of research into the need for, and challenges of, generational diversity in the workplace. It will soon be common for an organization’s workforce to span three, four, or even five decades in age. Intergenerational dynamics can bring up many issues in a workplace, but these issues can be turned into opportunities for learning and development.

Devising strategies to access the latent knowledge of older experienced employees is one of the biggest untapped areas of potential business improvement. Knowledge transfer is not only technical. There is a lot of tacit or “soft” knowledge that is just as crucial for a person to know to perform a job effectively.

If people’s understanding, skills, and attitude determine their value to a company, how do we get the 30-year-old manager to recognize that the 65-year-old can teach a lot to the recently hired teenager looking for guidance and direction?

McCrindle Research has looked into how older and younger generations need to understand each other’s perspectives to produce a smooth working relationship. McCrindle points out that in dynamic workplace cultures, all generations need to be open minded, realizing that age-based stereotypes, at either end of the generational span, are inaccurate and limiting. Additionally, without understanding the different values and perspectives of its employees, organizations run the risk of creating a toxic internal culture.

The last word on the value of older workers goes to Nicholas’s (coauthor) father. Growing up, he used to say to me, “Two ears, one mouth—listen twice as much as you speak, and you will learn something worth sharing.” A sentiment that remains as true now as it ever was.

Andrew Sezonov is general manager of WPC Group, Australia’s leading apprentice and trainee employer. He has more than two decades of experience in human resources, facilitating employment and training outcomes in various industry areas. Further, Sezonov has created, implemented, and managed work-based learning programs for youth, young adults, and transitioning mature workers.

Nicholas Wyman is chief executive officer of IWSI America. He applies real-world solutions to the challenges companies face finding skilled employees and uses IWSI’s apprenticeship model to shape the thinking, attitudes, abilities, and skills of people transitioning from school to work. Wyman, a Winston-Churchill Memorial Fellow, is an international expert speaker and author

on apprenticeship and career and technical education and training models. He is a regular contributor to *Forbes* and writes pieces for such publications as *Fortune* and *Quartz*. Wyman has also received the USA Best Book Award for *Job U: How to Find Wealth and Success by Developing the Skills Companies Actually Need*. He started his career learning a trade in commercial cookery, was awarded Australian Apprentice of the Year in 1988, and captained Australia's gold medal-winning culinary youth team before becoming a chef specializing in fish at the London Ritz Hotel.

Veterans, Dairy Work for Dreams

Samantha Loomis

Matthew Keesling has always wanted to own a dairy farm. He's a veteran who served 24 years in the US Army. It's when those two paths began to overlap that he believed his dream of becoming a dairy farmer could come true.

Enter the Dairy Grazing Apprenticeship.

The apprenticeship program, located near Medford, Wisconsin, recently received a \$954,000 grant from the US Department of Agriculture's National Institute of Food and Agriculture. The apprenticeship was one of six organizations that received a grant through the Enhancing Agricultural Opportunities for Military Veterans Competitive Grants Program, commonly known as the AgVets program.

Before the grant award, Keesling was an apprentice through the Grazing Apprenticeship program. He was working on the Bures Organic Dairy Farm near Deerbrook, Wisconsin. After the grant award, he's still an apprentice working toward journeyworker status, but he's also the program's new veteran liaison. Part of the funding from the grant goes toward creating and paying for his new position.

Keesling said he volunteered himself to apply.

"I kind of raised my hand and said, 'You know, this is something that's right in my wheelhouse. It's stuff I like doing,'" he said. "Trying to get like-minded folks like myself that are leaving the service into agriculture."

Having spent a large piece of his life in the army planning for his dairy career, Keesling believes he's a good fit for the position. He was one of the first apprentices to use veteran benefits while enrolled in the apprenticeship program.

"I planned and researched several farms in several states," he said. "I tried to correlate between maximizing veterans benefits, opening a business, and retiring."

He thinks his life experiences and his age, 43, lend more to the position than someone who is younger and just had an interest.



Laura Paine, program director at Dairy Grazing Apprenticeship, has been with the program for more than three years. She was the principal grant writer for the grant. She was interested in the grant because of the connections between veteran and farmer skill sets.

“We see some similarities between the skills and aptitudes that someone who has gone through military service gains and some of the needs that our ‘masters’ have for employees—in terms of work ethic, self-discipline, and that intrinsic motivation to succeed,” she said.

The combination of the grant funding and Keesling’s veteran knowledge has led the apprenticeship program to recruit more veterans.

“We’ve started some preliminary recruiting of candidates,” Paine said. “Our timeline for the grant was to get Matt on board before we kicked things off and got things moving. Since the grant started, we’ve had 12 or 15 veterans applying on our website.”

Keesling is set to graduate from his apprenticeship in June. He will then begin the next leg of his journey to owning a dairy farm—becoming a journeyworker. While he’s completing his dairy education, he also has numerous goals for his position as veterans liaison.

“I want to be able to make it easier,” he said. “I want to recruit veterans and find them local installations through outreach, through media, through Facebook.”

He said he also wants to be a veteran's first point of contact within the Dairy Grazing Apprenticeship. That way, future veteran apprentices can avoid the challenges he faced.

"I want to be able to expedite (the process) and make it less of a challenge to future veterans coming into ag," he said.

As for owning his own dairy farm, Keesling said his current master grazier, Andy Bures, may or may not sell his farm in the spring. If he does, fulfillment of Keesling's dream may not be too far away.

Samantha Loomis is a former news assistant for *Agri-View*. She writes about the environment, youth in agriculture, livestock, and anything else that may happen to cross her desk.

6. Public and Private Sector

The private sector is not the only place apprenticeship advocates are thinking outside the box. John Marotta, Robert I. Lerman, and Myca San Miguel describe how states are moving into modern apprenticeship through civil service, focusing on Kentucky's endeavors. In "Expanding Opportunity through Civil Service Apprenticeships," the authors open with an impressive finding that one in five respondents to a 2018 survey of state and local government human resources professionals reports that "internships and apprenticeships are a successful recruitment practice for reaching qualified candidates." This finding is important in light of the government's struggle to attract and retain the next generation of public-sector employees. The authors then drill down on specifics, including program design of civil service apprenticeships, candidate recruitment, and the benefits of these apprenticeships for employers and apprentices.

Laura Paine presents a unique application of apprenticeship to the dairy grazing industry. In "Training the Next Generation of Farmers Using Formal Apprenticeship," she introduces this workforce development model to agriculture. As is the case for many small-business owners, igniting interest in and passing industry expertise and business acumen to future generations is a challenge. The same goes for farming. In this case, Paine describes Dairy Grazing Apprenticeship's (DGA's) approach to expanding the organic farming industry amid the following trend: 5 to 10 percent of dairy farms disappear every year, and many retiring farmers have not identified successors. Paine defines key components of DGA's increasingly popular apprenticeship program and concludes with opportunities and challenges.

Expanding Opportunity through Civil Service Apprenticeships

John Marotta, Robert I. Lerman, and Myca San Miguel

Public-Sector Apprenticeships in Context

The government sector employed nearly 23 million workers, or about 15 percent of all US nonfarm workers, in April 2019.¹ Local governments account for about two-thirds of this total. Governments also employ workers through external service contracts and influence job markets by purchasing goods and services. In Kentucky, the government share of workers is 16.2 percent, slightly higher than the national average. Despite these figures, state and local governments are struggling to attract and retain the next generation of public servants, in part because of an aging workforce and persistent fiscal challenges.²

To address these pressing talent pipeline challenges, state and local governments are trying new strategies (Kellar and Young 2018). In a 2018 survey of state and local human resources professionals, 20 percent of respondents reported that internships and apprenticeships are a successful recruitment practice for reaching qualified candidates (CSLGE 2018). Although public employers have long used apprenticeships, and public administration provides nearly 20,000 apprenticeships in 31 states that report individual industries,³ recent initiatives to expand apprenticeship have generally not addressed the possibility of expanding apprenticeships in the public sector. Some have called on government to lead by example (Craig and Bewick, n.d.).

Governments failing to act on this front would be a missed opportunity for several reasons. First, the number of high-quality opportunities could increase substantially with a public-sector apprenticeship initiative. The United Kingdom set a goal to have 2.3 percent of its public-sector workforce in apprenticeships. Achieving this target in the US would mean doubling the number of apprenticeships registered with the federal or state governments. In Kentucky, the results are even more striking: reaching the target would mean over 7,000 new registered apprenticeships, more than doubling the number of registered apprenticeships. Public service apprenticeships operate in the US with varying numbers. For example, about 1,800 apprentices are firefighters, mainly in California, representing about 0.5 percent of all the country's firefighters. In the UK, public-sector apprenticeships cover many roles and careers, including teaching, firefighting, and housing the homeless. With more than 30 apprenticeships in the public sector, apprenticeships range from adult care to security services to educational leadership.

A second rationale is that apprentices can be productive, even during their training. The training embedded in apprenticeships will generally increase the expertise of caregivers, security personnel, and teachers while strengthening their identification with a public service culture. These apprenticeships

can increase the diversity of public service workers, as increased emphasis is placed on “learning by doing” instead of academic learning exclusively.

A third rationale relates to government officials’ ability to promote private-sector apprenticeships. Having public service apprenticeships provides officials an in-depth understanding of how apprenticeships can improve workplaces and provides them credibility when they speak with potential sponsors in private firms and nonprofits about why such organizations should embrace apprenticeships.

Finally, many public-sector occupations have private-sector counterparts. Demonstrating the success of apprenticeship for occupations in information technology, security, maintenance, administration, and counseling can help make apprenticeship adoption more seamless in the private sector.

For these reasons, the Kentucky state government’s decision to develop public-sector apprenticeships is worth examining. This chapter explores the initial steps Kentucky has taken to develop talent for state government through apprenticeship. Although these early efforts are small, they can expand within the public sector and help translate Kentucky’s broader initiative to expand apprenticeship in the private sector.

Learning about Kentucky’s Civil Service Apprenticeships

In 2018, Kentucky launched several pilot apprenticeship programs, including a pioneering program to increase opportunities for people pursuing a social services career in state government. Urban Institute researchers sought to understand these innovative civil service apprenticeship programs by conducting interviews and reviewing press and collateral materials about the programs. Urban staff conducted interviews in December 2018 and January 2019 with 22 people, including 5 apprentices and public officials representing the Kentucky Department of Human Resources Administration, the Department of Workforce Investment, the Commonwealth Office of Technology (COT), the Department of Community Based Services (DCBS), the transportation cabinet, and the Barren County government.

In interviews, Urban researchers gathered information on apprentices’ experiences in their programs, such as competencies and knowledge gained; employment goals; how they discovered the apprenticeship program and what their first impressions were; their duties, responsibilities, and opportunities; and their thoughts about how the apprenticeship might be improved for future cohorts. Interviews with public officials and apprentice supervisors covered program design and registration, recruitment and screening, program implementation and administration, benefits to state and local governments, and plans for program modification or expansion.

Urban researchers examined four apprenticeship programs: the direct support specialist program administered by the DCBS, the computer support specialist (help desk technician) program administered by COT, the automotive technician specialist program administered by the transportation

cabinet, and the office administrative services program administered by the Barren County government.

Although each program was developed differently to meet each entity's needs, the education cabinet and the workforce development and personnel cabinets identified and created public-sector apprenticeships mainly to address the Kentucky government's talent pipeline challenges.

How Were the Civil Service Apprenticeships Developed and Designed?

The initial steps began with Derrick Ramsey when he was secretary of Kentucky's labor cabinet. As part of his broader initiatives in promoting apprenticeships, Ramsey recognized that the state had leverage to develop high-quality government positions that would fit the skills various state departments required. He realized that as government pensions were becoming less attractive, new steps were necessary to attract, train, and retain a high-quality state workforce. Moreover, the initiative could diversify the public-sector workforce and provide new options for young people to enter apprenticeships early in their careers. Making these apprenticeships a reality required the personnel cabinet to help develop the program. The personnel cabinet started by creating the first apprenticeship I and apprenticeship II job categories, which offer sufficient flexibility to meet the needs of each agency and position while incorporating appropriate criteria to meet statewide employment requirements.

In addition, local and regional apprenticeship champions—from Secretary Ramsey to the state's apprenticeship coordinators and local technical education teachers—contributed to and sparked interest among the various offices that acted on this opportunity. Officials from the personnel, labor, and education and workforce cabinets led discussions with state and local government staff members to make the case for apprenticeship in their offices. Once these conversations turned to action, the commonwealth publicized its progress through press releases and public events, which gained further attention through state and local media coverage. Finally, senior-level management expressed curiosity about apprenticeship programs and in this initiative specifically, and offices moved toward establishing programs.

Actual Registration Requirements

Each program followed the same registration process. The sponsoring office began by identifying the occupation of interest. Offices had to determine whether the occupation was "apprenticeable." Doing this provided agencies the chance to tap into the occupation's network for support, by leveraging materials and resources from those already navigating the field.

Each sponsor used work processes and competencies related to the relevant occupations with guidance from the Division of Apprenticeship. Program administrators used these work processes and competencies as a starting point for program design and then customized those job functions based on their needs. This created efficiencies and allowed the agencies to fully design and register their programs in a timely manner. The participating agencies, in partnership with the Division of Apprenticeship, also determined whether the programs would be time based, competency based, or a hybrid of both. In a time-based program, the work process schedule states how many hours the apprentice will spend on the job and in the classroom to complete the program. A competency-based program prioritizes how well an apprentice can demonstrate his or her ability to fulfill primary job functions in the workplace, regardless of the time to proficiency. In a hybrid program, the employer may require the apprentices to demonstrate competencies to complete some program elements and to complete a certain number of hours to meet other requirements. The DCBS direct support specialist program is competency based, the COT computer support specialist program is a hybrid design, the transportation automotive technician specialist program is competency based, and the Barren County government office administrative services program is time based.

Working with the Division of Apprenticeship on this step allowed sponsors to move quickly by taking advantage of their knowledge of existing occupations and expertise in the current environment. The next step in the registration process required offices to partner with a subject-matter expert who possessed experience and comprehensive knowledge of the skills required for the job. The subject-matter expert would generally be able to provide or recommend the related technical instruction (RTI), a key component of the registered apprenticeship program. All time-based programs require an apprentice to attain 144 hours of RTI in conjunction with 2,000 hours of on-the-job training. In each program Urban researchers learned about, the offices teamed up with nearby high schools, universities, and technical colleges to comply with this requirement.

How Were Apprentices Recruited?

Each program leveraged relationships with high schools or technical colleges to market the program and target recruitment. In Barren County, a prominent local official used his connections and relationships with high school college coordinators to identify promising students who had taken courses in business-related subjects. Relying on teachers to be a bridge between the government agencies and students was common, as four of the five apprentices we spoke with reported they learned about the apprenticeship opportunity either from a teacher directly or from a message the teacher disseminated to a group of students. Several agencies also considered geographic areas when engaging in targeted outreach. For instance, the DCBS emphasized candidates in parts of the state with few economic opportunities. The transportation cabinet's apprenticeship coordinator conferred with supervisors from all the state's regional equipment garages to determine which regions had the most trouble finding and retaining high-quality mechanics.



Tracy Osborne Clay, Deborah Williamson, Secretary Derrick Ramsey, and Diana Jarboe announce Kentucky's Civil Service Apprenticeships at the state capitol, May 15, 2018. Photo courtesy of Ervin Dimeny.

Several programs tapped into the statewide Tech Ready Apprenticeship for Careers in Kentucky (TRACK) program to recruit students.⁴ The program, administered by Kentucky's department of education, offers students the ability to obtain dual secondary and postsecondary credits while earning an apprenticeship wage. For the computer support specialist apprenticeship program, participation in TRACK is required. The direct support specialist program saw TRACK as one pathway for candidates to reach the DCBS as an apprentice. The automotive technician specialist program required students to be enrolled in an automotive or diesel technology program through the Kentucky Community and Technical College System (KCTCS).⁵ The transportation cabinet collaborated with KCTCS instructors to select students likely to be strong apprenticeship candidates.

Since the four apprenticeship programs have undergone at least one recruitment phase, some are using current apprentices to find new candidates. In Barren County, the apprentice's supervisor has invited his apprentice to external meetings so she can communicate directly with community members about the value and advantages the program has offered her. At the DCBS, program administrators have encouraged apprentices to discuss their experience in the program with other students to increase awareness of and interest in the program.

Once the agencies identified promising candidates, often with help from high school or technical college counselors and teachers, they used distinct application processes to make hiring decisions. Each program included a paper or online application followed by at least one interview. In the automotive technician program, applicants interviewed with the equipment garage supervisor and then spoke with other mechanics in the garage. For the direct support specialist program at the DCBS, candidates first interviewed with the cabinet-level apprenticeship coordinator and then with supervisors at the appropriate Protection and Permanency and Family Support locations. In Barren County, the candidate interviewed with a high-level county official.

Although the programs ultimately recruited high-quality candidates, they did encounter challenges and even adjusted their approaches. The computer support specialist program hit an early barrier when it began outreach to high schools during the weeks leading up to summer vacation. Program administrators learned this was an inopportune time to connect with students and will adjust the schedule in future years. Within the transportation cabinet, several students were selected for the program and then resigned or were dismissed. There were several reasons for these departures, but one reason stemmed from the timing of recruitment in their classroom instruction. Initially, students were recruited during their first semester, and instructors made recommendations based on limited exposure to the students. After several apprentices were not retained, the transportation cabinet and the KCTCS decided to recruit from students in their second semester, when instructors were more familiar with students and could better assess their aptitude and work ethic. This process has helped the transportation cabinet develop a better hiring approach.

What Are the Benefits of Civil Service Apprenticeships?

The Kentucky Division of Apprenticeship enumerates the myriad benefits of the apprenticeship model for employers (KDA 2018a). These benefits include custom training for employees to meet specific business needs, reduced recruitment and training costs, increased productivity among newly trained and appropriately skilled workers, enhanced employee loyalty and high employee retention after programs end, and structured transference of knowledge from experienced and older workers to the next generation.

Similarly, the Division of Apprenticeship touts the benefits of this type of work-based learning to potential apprentices (KDA 2018b). Reported benefits for apprentices include receiving training and education at a reduced cost or no cost, getting paid to learn, earning more pay as new skills are mastered, obtaining nationally recognized and portable industry credentials, gaining hands-on experience, and potentially receiving college credit toward an associate's or bachelor's degree at little or no additional expense.

What Do Civil Service Apprenticeships Aim to Achieve?

Speaking with program administrators and supervisors, Urban researchers discussed each agency's motivation for launching an apprenticeship program and how they might determine whether the pilot has been a success. COT officials told Urban researchers they sought primarily to develop a pipeline of young talent to fill critical positions within COT and to be in a better position to rely less on temporary or contract staff and more on permanent civil servants. Because of increased demand for their services across state government agencies combined with steady or decreasing budgets and fewer young people interested in government jobs, COT has increasingly depended on contract workers for project-based assignments. To increase opportunities for young people, COT aims to use the apprenticeship program as a pathway to permanent state government employment for computer support specialists without the standard bachelor's degree requirement. COT also hopes the program can be a reliable source of talent for rural areas in Kentucky that have an acute shortage of IT workers.

Transportation cabinet officials aspire to cultivate the next-generation workforce that can fill automotive technician jobs across the state's 12 transportation districts. Transportation secretary Greg Thomas captured the apprenticeship program's aims in a press release: "[Transportation Mechanic Apprenticeship Program] apprentices will help maintain and repair the equipment our road crews use to provide a safe and reliable transportation system for all who travel Kentucky's roadways."⁶ The program's primary goals are to ensure apprentices complete the program within two years and are prepared to fill permanent full-time positions in one of the state's equipment garages. An equipment garage supervisor put his projected staffing concerns in stark terms when he told Urban researchers, "In 3 to 5 years, 70 percent of people in this garage might be retired, and [the apprenticeship program] will be a good way to get good, qualified candidates [whose skills] are up to date."

Officials from the DCBS said the state requires 54 hours of college credit and two years of experience to qualify for social service positions. In opportunities created by the direct support specialist apprenticeship program, the DCBS aims to ensure these statewide job requirements will be amended to account for apprenticeship experience. Further, at a program launch event, DCBS commissioner Adria Johnson noted the apprentices will provide added bandwidth for the department, which provides benefits to hundreds of thousands of Kentuckians.⁷ In a similar vein, personnel secretary Tom Stephens said, “An apprenticeship program will help Kentuckians specifically prepare for these important jobs, and in turn, help better meet the needs of some of our most vulnerable citizens.”⁸

For the Barren County government’s apprenticeship program, officials hope to spark more interest in county government operations among young residents. Through the apprenticeship program and a more visible presence for county government in high schools and colleges, county officials aspire to motivate greater youth involvement in county government by making them more familiar with their elected and appointed officials so they know where to go to resolve the issues they face.

The researchers’ conversations with officials from the Department of Human Resources Administration, situated within the personnel cabinet, offers insights relevant to creating civil service apprenticeships across state government agencies. Department officials said civil service apprenticeships aim to prepare apprentices for entry-level positions in state government and to support apprentices in gaining merit status—which confers specific rights and benefits—after 12 months of public service. The personnel cabinet will measure success of the apprenticeship pilot programs by how many apprentices become full-time, permanent government employees and by how well the apprenticeship programs boost recruitment of young workers from high school to civil service positions. The Department of Human Resources Administration suggests that the extent of retention and conversion to permanent employees should speak to the program’s ability to recruit candidates genuinely interested in civil service careers.

What Are the Benefits for Employing Agencies?

Although the programs have operated for less than a year, the employing government offices noted that each program offered tangible and practical benefits. At a minimum, apprentices complete tasks that incumbent workers would have done if the apprentices were not employed. This is something officials and apprentices mentioned to the researchers for three of the four programs. In the auto mechanic program, the apprentice supervisor remarked that apprentices regularly complete work that would have been delayed several days without their labor. A social services apprentice noted that after a few months of on-the-job training, she could complete virtually the same tasks as an incumbent worker, which reduced the workload for fellow office staff.

During the Barren County program, the apprentice achieved a level of proficiency and knowledge that has enabled her to substitute for senior county officials at public speaking engagements. Further,

the program supervisor noted that the apprentice's preexisting technological knowledge and familiarity has increased efficiency in office operations, while her dedicated energy and willingness to help has enhanced productivity and improved the workplace environment. Similarly, apprentices have applied lessons learned during classroom instruction to their work in the transportation equipment garage, demonstrating new methods, tools, and technologies to journeyworker mechanics.

At COT, the employing team was in the middle of a governmentwide effort to upgrade the operating systems on all staff computers. The apprentices were quickly able to support journeyworker help desk technicians and contribute. Another way civil service apprentices have made an immediate impact is during the busy seasons of snow and ice treatment and grass mowing. In the transportation equipment garage, experienced mechanics can be overwhelmed with increased workloads. Apprentices have helped with these maintenance and repair assignments, putting critical pieces of equipment back into use more rapidly.

In speaking with officials and an apprentice associated with the transportation automotive technician program, we learned about ways the program has benefited the state's equipment garages. Supervisors observed that apprentices seek out ways to contribute to garage operations, such as independently looking for equipment in need of cleaning or repair and performing maintenance on tools used for repair. Apprentices have also transferred knowledge about advances in diagnostic software from the classroom to their colleagues in the garage. After roughly one year of on-the-job experience, supervisors have seen apprentices progress to a level of mastery in which they can receive a piece of equipment, diagnose a problem, select the appropriate and necessary tools, and accurately complete the repairs with minimal instruction or oversight. Through the apprenticeship structure, supervisors can assess work ethic, skill proficiency, and professionalism before making a permanent hire. These characteristics are impossible to ascertain during interviews, but they will emerge over several thousand hours of on-the-job learning during an apprenticeship.

What Are the Benefits for Civil Service Apprentices?

In conversations with five apprentices and their supervisors from four of Kentucky's civil service apprenticeship programs, we learned about how these programs have advanced the skills, knowledge, and career prospects for apprentices.

The direct support specialist apprentice applied to the program because she wanted to serve her community, and she aspires to obtain full-time, permanent employment with the DCBS. Without this apprenticeship opportunity, she explained, she would likely be earning low wages in a retail or service-sector job. With the program, she can work meaningfully toward her ultimate career goal of being a social worker. The on-the-job training she has received at the Protection and Permanency and Family Support location where she is based improved her social, communications, and computer skills and taught her how to multitask in an office environment. By being exposed to different facets of social

service delivery, she has increased her subject-matter knowledge and relevant work experience, all of which should help her obtain a permanent position in social services.

At COT, the two computer support specialist apprentices hope to continue working in state government as permanent civil servants. If that is not possible, they would enroll in a four-year college program in computer science or pursue job opportunities at prominent private-sector employers, such as Amazon. One apprentice was finding it difficult to break into the tech field without prior work experience and noted that the apprenticeship will provide the necessary entry-level experience. After roughly four months on the job, apprentices mastered certain competencies and became comfortable doing the work through repetition and guidance, especially on systems software. Moving forward, the apprentices aim to master more complex tasks under the tutelage of supervisors and peer technicians.

The automotive technician specialist apprentice applied to the program to obtain relevant experience, gain the ability to diagnose and repair a broad range of vehicular problems, and to be well positioned to obtain full-time employment in a state transportation equipment garage. The apprenticeship has helped him earn an advantage over many of his classmates in progressing toward the two years' work experience required for the National Institute for Automotive Service Excellence certification exam. Many classmates will not have this experience when their classroom training is complete, but the apprentice will have met the threshold. Even some of the students who have found work have struggled to balance schedules for school and work. In contrast, the state transportation equipment garage has been flexible to accommodate the apprentice's classroom instruction schedule. The apprentice said the program's biggest strength is the breadth of the on-the-job learning and experience he will attain working on various vehicles and machines, including learning repairs that technical schools do not cover. On the job, the apprentices work with a broad array of vehicle makes and manufacturers, helping them qualify for both private- and public-sector jobs. If an equipment garage did not offer a permanent job at the end of the program, the apprentice would be an attractive candidate to local private-sector employers such as Caterpillar, John Deere, and auto dealerships.

In Barren County, the apprentice told the researchers she plans to study accounting and political science in pursuit of a bachelor's degree and, ultimately, Certified Public Accountant licensure. Because classroom training is an integral part of the program, the apprentice has been afforded scheduling flexibility from her workplace supervisors, as they recognize the connection between classroom learning and on-the-job learning. She views the office administrative services apprenticeship as a valuable experience for sharpening her networking skills and cultivating professional relationships and for expanding her knowledge about the mechanics of developing the county's budget and how those resources are allocated and managed. Beyond cultivating a professional network, the apprentice has interacted with and learned from community members she would not have met without the apprenticeship, which has deepened her passion for serving the community and supporting its growth.

When they discovered their respective programs, all five apprentices possessed little or no knowledge about what an apprenticeship was, how it operated, or how it could boost their career

prospects. Yet when we spoke with them, they were convinced these programs were valuable in terms of applied education and skills and career advancement. All five said they would recommend their apprenticeship program to peers, friends, and family members interested in the same career path.

Conclusion and Implications

Kentucky has embraced the apprenticeship model as a key element of its strategy for recruiting, training, retaining, and diversifying a skilled workforce to become state employees. The process began with the realization that the state, as a major employer, could make its operations more cost-effective while increasing opportunities for public-sector careers.

Other states and localities are following suit. Philadelphia is piloting career pathways and work-based learning opportunities with its fleet, parks and recreation, streets, and water departments.⁹ These apprenticeship programs hire and train young people to work in the city's automotive garages, maintain trees and roads, and improve city communications and outreach.

In Boston, the Mayor's Office of Workforce Development collaborated with Boston Emergency Medical Services to develop an emergency medical technician apprenticeship program (Mayor's Office of Workforce Development 2019). The city hopes this will boost its ability to recruit workers and offer opportunities for good wages, benefits, and academic and career growth.

To continue building momentum for public-sector apprenticeships, leaders should encourage state officials to develop apprenticeships in many occupations, many of which have private-sector counterparts. As department managers learn more about how to build and manage apprenticeships, they should document the program's benefits and costs to the departments and to the apprentices. Public officials can increase their credibility when promoting apprenticeships in the private sector by pointing to the largely positive results in the public sector. Based on Kentucky's experience, public-sector apprenticeships look like a viable way to expand economic opportunity and address the talent needs of state and local government.

Notes

¹ "Table B-1a. Employees on Nonfarm Payrolls by Industry Sector and Selected Industry Detail, Seasonally Adjusted," Bureau of Labor Statistics, accessed August 2, 2019, <https://www.bls.gov/web/emp/sit/ceseeb1a.htm>.

² Katherine Barrett and Richard Greene, "Think Federal Workers Have It Bad? It's Worse for State and Local Employees," *Governing*, February 11, 2019, <http://www.governing.com/topics/workforce/gov-state-local-government-employee-pay-salary.html>.

³ "Registered Apprenticeship National Results Fiscal Year (FY) 2018 (10/01/2018 to 9/30/2018)," US Department of Labor, Employment and Training Administration, last updated March 6, 2019, https://doleta.gov/oa/data_statistics.cfm.

- 4 “TRACK: Tech Ready Apprentices for Careers in Kentucky,” Kentucky Department of Education, July 1, 2019, <https://education.ky.gov/CTE/cter/Pages/TRACK.aspx>.
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- 7 “Kentucky Launches First-of-Its-Kind Apprenticeship Program for Social Services,” *Lane Report*, May 15, 2018, <https://www.lanereport.com/101252/2018/05/kentucky-launches-first-of-its-kind-apprenticeship-program-for-social-services/>.
- 8 “Kentucky Launches First-of-Its-Kind,” *Lane Report*.
- 9 Juliana Feliciano Reyes, “How Philly Is Using City Jobs to Tackle Poverty,” *Philadelphia Inquirer*, December 17, 2018, <https://www.philly.com/news/government-jobs-apprentices-civil-service-poverty-20181217.html>.

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Apprenticeships Solve Issues for Rural Ambulance Services

Forest Weyen and Bill Camarda

The Problem

Emergency medical services (EMS) is the health care arm of the public safety triad. EMS professionals have the knowledge, skills, and abilities to handle injury or illness at any time, regardless of situation.

In the 1950s and 1960s, EMS agencies grew out of a need for services as the population increased and expanded in suburban and rural areas. People needed transportation to the hospital and treatment on the way. EMS agencies sprung up wherever people or a governing body wanted to address this issue. These people usually volunteered their time and efforts to help their neighbors and communities. They did not necessarily have formal medical training or anything to help them understand where they fit into the larger system. This volunteer model was, and in many cases remains, the backbone of EMS for much of the nonurban United States.

EMS looks different than it did in the beginning. To become a licensed, credentialed provider, one must take hundreds or thousands of hours of classroom, skill, clinical, simulation, and scenario-based training and pass a national cognitive and psychomotor exam. This process includes annual requirements of continuing education and skill maintenance. This is not an undue burden, as the public and our patients expect clinical expertise and judgement in everything we do. EMS providers have the training and expertise to handle emergencies of all types and provide many treatment options, in addition to transportation to the hospital.

To become an emergency medical technician (EMT), one would take an EMT course at a local training center and pay more than \$1,500 to take the exams. And this process did not guarantee a job or a position in an agency. Plus, this was a large ask of someone wanting to give his or her time as a volunteer.

Volunteers' ability to obtain and keep the required certifications is difficult. Many agencies in the past 30 years have switched to some sort of compensation system for their EMS professionals. This model worked for a while, as the pool of applicants was large. It was not difficult to find someone to fill a paid position versus a volunteer position.

Recently, however, EMS began experiencing workforce shortages, a problem compounded as the lead time for training a newly hired entry-level EMT is typically six to nine months.

Something Needed to Change

To address our shortage of trained personnel, we improved our marketing, streamlined our application process, improved our hiring procedures, paid for targeted online marketing, created a social media presence, and the like. But we continued to receive only a minimal response for our efforts. Some interviews were even canceled, as we did not have any applicants.

Additionally, our agency's needs were not decreasing. Our requests for service and the hours needed to meet that demand were increasing, straining our staff. We regularly saw 300 or more hours of overtime in a pay period. This was neither a safe nor a sustainable way to operate.

The Idea

We understood that a multifaceted approach would be the only way to solve this problem. We partnered with local schools, increased job shadows, created new and innovative training programs, catered to local colleges, and looked at other partnerships.

While meeting with our local regional technical school partners, we heard this question: "Have you ever considered apprenticeship or creating a preapprenticeship program?" We had not, but the idea landed with us.

We reached out to our state department of labor to investigate apprenticeships. We found a world of workforce development that had been hidden from the EMS industry for years. There were three kinds of apprenticeship programs: a time-based program, a competency-based program, and a hybrid program. The hybrid format closely modeled our field training program and was the natural choice.

The only thing new to us was that we had never hired full-time staff who were not currently EMS providers or at minimum nearing completion of a training program. In addition, we had to introduce a graduated wage structure and a path for apprentices to follow.

The Process

The process was easier than we thought it would be. The heaviest lift was determining what we needed for our workforce and to ensure organizational backing for the program. The department of labor shared templates, which we customized for our organization. The department also helped us complete forms and navigate the process for our first foray into apprenticeship. Using that assistance, we codified the apprenticeship program structure and developed a graduated wage structure. We also achieved a state workforce development grant to partially compensate for the costs to train our new apprentices.

Our executive leadership was on board, and our board of directors was presented the package and unanimously agreed to the program. We submitted our application and were approved as the first registered EMT apprenticeship in Vermont.

Marketing

Once the pieces were in place, we made a commitment and investments into marketing and public awareness. We created a comprehensive media plan that included video, still photography, print advertising, home mailers, social media presence, a web page, and press coverage, culminating in a widely marketed open house.

Implementation

With the EMT training program, we could use a cohort model to group the application, interviews, hiring processes, initial onboarding, and training program into a streamlined process. Initially, we had decided to hire 4 apprentices for our initial cohort. At the application deadline, we had more than 30 applicants, and based on a review of our needs, we decided to hire 6 apprentices.

Our hiring process is intensive but gives us employee buy-in. Applicants interview with administration, the operations team, and field-level staff. All parties meet at the end of the interviews to share perspectives. We then use a consensus-based model to make offers to candidates who best fit our mission, vision, and core values.

New apprentices enter an intensive combined classroom and on-the-job training regimen. This path starts with new employment with human resources activities, required education, safety reviews, and the like and moves on to Emergency Vehicle Operations Safety (EVOS), cardiopulmonary resuscitation (CPR), and driver training. Apprentices then enter an EMT course. This course follows the National Scope of Practice, is approved by the Vermont Office of EMS, and allows the student to sit for the national certification exam.

Once the apprentice achieves national certification, the process to obtain state licensure is straightforward. Once approved by the state, apprentices enter our Field Training and Evaluation Program, where they work alongside credentialed field training officers. This three-phase program takes a minimum of 25 shifts and requires oral boards and vigorous simulation testing.

Upon completing the third phase, the apprentices are credentialed to operate as a sole clinical provider (EMT) in the back of an ambulance providing medical care.

Summary

The apprenticeship program is showing great promise. Our first cohort is close to being credentialed as entry-level EMTs. We are hosting a second cohort starting in June 2019 to help meet our anticipated 2020 staffing needs. We believe this model will continue at least annually for the foreseeable future.

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Crandall Farms Brings Apprenticeship to Beekeeping

Phillip Crandall

Regardless of business size, modern apprenticeship makes sense. For apiarist Phil Crandall of Crandall Farms, apprenticeship has affected his business.

Crandall Farms is a beekeeping sole proprietorship. It maintains 10 large apiaries (honeybee yards) in Iowa and Illinois that can hold as many as 30 hives each. Every hive contains 40,000 to 60,000 worker bees and their queen. Phil has operated his registered apprenticeship program for a little more than a year. The program's length is three years, and IowaWORKS (Iowa Workforce Development) has been helpful in launching Crandall Farms' apprenticeship program, especially in casting a wide net to find candidates for the beekeeper position. The organization continues to advise Phil along the way.

Why did Phil decide to go the registered apprenticeship route? For several years, Phil had not had much success with hiring. Beekeeping at Crandall Farms is complicated.

Like other registered apprenticeship programs, Crandall Farms' apprenticeship is a combination of on-the-job and formal training. Unlike most programs that do their formal training in the classroom, however, beekeeper training is available through webinars and YouTube videos. In fact, little "official" formal training is available. The beekeeper's education is mostly experiential, with hands-on work reinforcing online training concepts.

A beekeeper's training schedule is not cut-and-dried. Because Phil's operation is small, his apprentice, Benjamin Westerman, performs many tasks. The company's size enables Phil to sequence those tasks as he sees fit, which is especially important for the beekeeping business given its dependence on unpredictable weather. It is also indicative of the flexible nature of modern apprenticeships.

Phil believes learning fundamental skills (i.e., soft skills) is as important as achieving competency in the technical aspects of beekeeping. Knowing how to manage time, organize responsibilities, and establish priorities are essential qualities of operating and expanding a small business. Both Phil and Benjamin agree that every beekeeper faces obstacles (e.g., disease, pests, overwintering, or flooding). Anticipating or identifying these problems early and recognizing danger is a product of experience. Creativity, resourcefulness, and problem solving are essential to beekeeping in addition to developing a process for dealing with this year's challenge in anticipation of it happening next year.

Benjamin can attest to the need to develop fundamental skills beyond technical skills and how they affect success at work: "As one who works in an environmental field, such as those in conservation or agriculture, we should try our best to balance and meet the needs of both wildlife and people. We

should be willing to work with nature, keep an open mind, and understand that circumstances change. Considering these ideas, we should also become flexible in our methods and never stop learning, as there is always improvement to be made.”

Beekeeping has many nontraditional elements, including return on investment.

- Phil and Benjamin believe they have “an obligation to teach the public about bees and food.” They bring their knowledge to both primary and postsecondary children and young adults at local colleges. One-third of the food we consume each day relies on pollination—mostly by bees (and for those conscientious about their diet, made-in-America honey cannot be organic). Bees travel within a three-mile radius of their hive, on average, pollinating 18,000 acres, and beekeepers cannot control a bee’s targets.
 - » *Return on investment.* The increase in public outreach (Benjamin gets around) has helped Crandall Farms’ business, and its community is increasingly in tune with the importance of honeybees.
- A small business like Crandall Farms needs an expert beekeeper and somebody who can make important business decisions, such as identifying supply needs, coordinating delivery logistics, experimenting with new methodologies to improve production, and reaching the public.
 - » *Return on investment.* The apprenticeship is helping Phil develop a highly skilled employee with the ability to multitask in a complicated business model.
- Phil is taking the long view of his business by investing in apprenticeship: “I am not simply interested in continuity. Rather, I want to proactively plan for succession and preserve the strong values of our business.”
 - » *Return on investment.* The creation of an apprenticeship program has motivated Phil to think about long-term success with strong leadership at the helm.

The monetary returns on Phil’s investment have yet to materialize. This is often the case with nascent apprenticeship programs. But Phil says that “formalizing and structuring an apprenticeship program” has forced him to fine-tune business practices and take a closer look at future growth opportunities. Like Phil, Benjamin is taking a long view of his work. As he becomes more familiar with beekeeping, he hopes to increase honey production and improve winter survival rates for the bees. In addition to beekeeping, Benjamin is a mead maker. He would like to develop and sell this beverage exclusively using Crandall Farms honey. Both bode well for Phil’s bottom line.

What advice would Phil give other small companies about creating an apprenticeship program? As a small-business owner, Phil would better structure the interview process, tighten up the job description, and prepare specific performance criteria against which to measure an apprentice’s progress. It is also important to sit down with an apprentice for monthly reviews to talk about challenges and gains.



Photo courtesy of the author.

Phillip Crandall is the founder of Crandall Farms, a family-owned farm and apiary, with apiary locations in Illinois and Iowa.

Training the Next Generation of Farmers Using Formal Apprenticeship

Laura Paine

Establishing a Formal Apprenticeship Tradition in Agriculture

What is the fundamental purpose of apprenticeship in society, and why did this form of training arise? For centuries, apprenticeship has been the means of maintaining and passing on the skills of trades that are essential to society, from engravers and silversmiths in the Middle Ages to electricians and plumbers today. Apprenticeships emerge in professions that require a blend of knowledge and physical skills not easily gained in the classroom. History tells us that work-based learning alongside experienced practitioners ensures that the skills needed for a functional society are maintained across generations. In some ways, it is surprising that no formal training tradition has been institutionalized for farming, the most basic societal function for producing the food that sustains us and stewarding the natural resources on which we depend. Now that has changed.

Dairy Grazing Apprenticeship (DGA) is the nation's first beginning-farmer training program registered as a formal apprenticeship with the US Department of Labor. There are many agricultural colleges and other beginning-farmer training programs. But DGA, by becoming a federally registered apprenticeship, has created a template and a standard to professionalize managed grazing dairy farming. With this national template, we can take the program anywhere there are dairy farmers who meet the standards and wish to contribute to training the next generation. We have created the foundation for what we hope will become a self-sustaining skilled trade tradition in agriculture.

Why Is It Needed, and Why Now?

The 1790 Census recorded “farming” as the occupation of more than 90 percent of the population. When the majority of a country's population produces its own food, training the next generation of food producers happens naturally. There was no need for a formal training program because parents taught their children to farm. That is no longer the case. Today, less than 2 percent of the population is engaged in producing our food, and farm children are not coming back to the farm (NASS 2019). We need to look outside the traditional farming community for the next generation of farmers and land stewards. The good news is that many young people a generation or two or more removed from the farm want to engage in agriculture and food production.

Why Managed Grazing?

Managed grazing is an innovative, environmentally friendly system for raising ruminant livestock. An estimated 25 percent of dairy farmers and 40 percent of beef farmers nationwide use this system, in which most of the farm fields are planted with perennial grasses and legumes and the herd is moved through a series of subdivisions called paddocks, allowing the animals to harvest their own high-quality feed and giving the remainder of the pastures time to rest and regrow before being grazed again (NASS 2014; Undersander et al. 2014). The system reduces production costs by reducing the need for livestock housing, crop production equipment, and inputs such as fertilizers, pesticides, and fuel. The result is increased potential for profitability, allowing the farmer to generate a living income for his or her family (Kriegl and McNair 2005). The system is based on perennial pastures that don't need to be replanted each year, providing long-term environmental benefits in soil health, carbon sequestration, water quality protection, and wildlife and pollinator habitat (Franzluebbers et al. 2012).

To date, DGA's work has focused on the traditional "Dairy Belt" of the Upper Midwest, Great Lakes, and New England states. Of the 37,000 US dairy farms, more than 31,000 are located in the Dairy Belt (NASS 2019). Dairy farming has played a major role in shaping these rural economies and landscapes. Dairies are economic engines in rural communities. Each cow generates an estimated \$34,000 in economic activity in terms of direct spending, processing, employment, and auxiliary businesses such as veterinarians and feed mills (Deller 2014). The region has a depth of knowledge, infrastructure, and dairy farming and processing culture, creating an effective learning environment for aspiring farmers. And with an aging farming population, one of DGA's goals is to facilitate transfer of those farm businesses to a new generation.

DGA's program is a two-year, 4,000-hour apprenticeship composed of 3,700 hours of paid, on-the-job training and 300 hours of online coursework and informal group education. Apprentices are trained on approved, privately owned dairy farms. As of 2019, the program has 170 approved Master Dairy Graziers in 12 states. At any one time, 40 to 50 apprentices are being trained. Graduates become Journey Dairy Graziers and receive a credential providing evidence of their management-level skills that can give them a leg up in getting a beginning-farmer loan, make them an attractive partner or manager on an expanding farm, or be in a good position to transition into farm ownership from a retiring farmer. Some DGA Masters participate in the program to identify and train a successor.

Building from the Ground Up

As the first formal apprenticeship in agriculture, DGA has received broad interest from other organizations involved in beginning-farmer training. We have also encountered many obstacles, the most significant of which is fostering a culture of apprenticeship within the agricultural community. In other skilled trades, there has developed over decades or centuries not only professional standards but a shared commitment to the premise of training the next generation, of passing along knowledge of the

trade to aspiring practitioners. There is a formalized tradition of mentoring. These standards and commitments are not consistently present in any sector of agriculture, and part of DGA's mission is to build that culture, to build a shared understanding of what it means to be a dairy farmer. This comes out of a sense of obligation to playing a role in training new dairy farmers, with the overarching goal of maintaining the historic family-scale, small business model of dairy production.

Dairy Grazing Apprenticeship was founded and is based in Wisconsin, where laws establishing formal apprenticeship were enacted in 1911, predating federal apprenticeship laws enacted in 1937.¹ Wisconsin's Department of Workforce Development continues its national leadership in apprenticeship programming and worked with DGA to create the initial work process schedule for the occupation of dairy grazing. Dairy Grazing Apprenticeship was the brainchild of Wisconsin dairy farmers Joe Tomandl III and Val Adamski and was created as an educational program of GrassWorks, a membership organization for farmers established in 1992. Tomandl continues to lead DGA, which became an independent 501(c)(3) nonprofit in 2013. Using a formal Developing a Curriculum (DACUM) process, the Department of Workforce Development helped DGA's farmers, agricultural professionals, and other subject-matter experts develop the curriculum. Over the two-year training, apprentices gain skills in the following areas:

- measuring and managing pastures for optimal quality and quantity
- managing cattle appropriately: heifers and dry cows, calves, and milking cows
- managing milking operations
- assessing dairy nutritional needs
- evaluating grazing and dairy farm information for effective decisionmaking
- managing soil and water resources for productivity and health
- managing farm business operations profitably

The curriculum is designed to provide the apprentice a comprehensive array of knowledge and skills needed to manage or own a dairy farm business.

In addition to 3,700 hours of work-based training, the apprentice receives 300 hours of related instruction, including classes in the following subjects:

- dairy health and wellness
- soil and water resource management
- managed grazing systems for dairy cattle
- dairy cattle nutrition, feed, and feeding
- milk quality
- farm business management

Until recently, DGA partnered with Wisconsin Technical Colleges and the University of Wisconsin to provide these classes. In 2018, we brought the classes in house under the structure of DGA's new Managed Grazing Innovation Center, an online platform for related instruction classes. Approved by the Wisconsin Educational Approval Board, the plan is for the school to go through the accreditation process when it becomes eligible after three years of operation. Additional related instruction requirements include informal learning and networking opportunities through pasture walks, field days, conferences, and other educational activities in the local community.

Building Capacity and a Culture of Mentorship

Because of the novelty of the concept of apprenticeship among dairy farmers, DGA has found it important to invest in on-the-ground staff to coordinate and support master-apprentice pairs. DGA and its partners engage part-time education coordinators who work with cohorts of masters at a state or regional level. Each education coordinator works with 10 to 30 approved masters, a subset of whom are training apprentices at any one time. Education coordinators have three areas of responsibility in their region: they conduct outreach and recruit both masters and apprentice candidates; they organize and host informal educational activities among masters and apprentices; and they facilitate the educational process between master-apprentice pairs. Master-apprentice pairs are provided 24 hours of education coordinator guidance distributed over the two-year training period. The education coordinator helps the master and apprentice identify goals, develop an individualized learning plan, and stay on track with their training program (job book) and related instruction, and coaches them through interpersonal and communication issues. The education coordinator ideally has a blend of dairy farming technical knowledge, adult learning background, and strong people management or "soft" skills.

As the industry sponsor, DGA maintains apprentice records and official documentation of their training. We have developed a custom website for this purpose, allowing us to expand nationally and provide a platform for DGA staff, masters, apprentices, and partner organizations to access, enter, and maintain records.² In addition to the external public website, we have a password-protected portal that provides an individualized dashboard for each participant, who is categorized as master, apprentice, staff, or education coordinator. Each participant category has a different dashboard format depending on the level of access needed, and participants' dashboards are individualized, displaying their own data. Each education coordinator manages a cohort of master-apprentice pairs, and those pairs appear on that education coordinator's dashboard along with journeyworkers and unpaired masters in their region. The education coordinator can monitor apprentices' progress and enter related instruction activities into their records. Education coordinators access official apprenticeship forms and agreements and other materials through the website. Masters' dashboards display their apprentices' records and allow them to enter work hours, pay rates, and in-kind compensation and to monitor the apprentice's related instruction progress. The apprentice dashboard provides a visual display of

progress in work and related instruction hours, as well as a portal into the online class learning management system and a calendar of informal group education opportunities.

A Growing Partner Network

DGA's high-quality program and individualized support is made possible by the network of partners we have assembled. Within the field of farmer education and training, there is increasing awareness of the impending challenges we face as a record number of farmers approach retirement age.³ Sixty percent of farmers nationwide are older than 55 and less than 6 percent are younger than 35. More than 570,000 farmers are older than 65, and these farmers represent an estimated 300 million acres of farmland (one-third of all US farmland) that is on track to change hands in the next decade. Recruiting and training people to manage those farms has become critical for agriculture education organizations.

Against this backdrop, Dairy Grazing Apprenticeship provides a unique and effective structure to ensure the skills and knowledge needed to manage those farm businesses and steward those natural resources are passed along to the next generation. The comprehensiveness of DGA's training curriculum and the turnkey nature of our system has made it simple for universities and nonprofit organizations to offer DGA as part of their programming. DGA currently partners with the following eight institutions to deliver the program in Iowa, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, and Wisconsin:

- Cornell University
- Michigan State University
- Pennsylvania Association for Sustainable Agriculture
- Sustainable Farming Association of Minnesota
- University of Maine
- University of Missouri
- University of Vermont
- Wolfe's Neck Center for Agriculture and Environment

Partner organizations bring significant value to the program. As entities that function in local and state communities, they know their dairy industry, and they are trusted by the farmers and processors, farmer organizations, and agencies that support the industry. Being embedded in the community allows them to integrate DGA into their program offerings and jump-starts their success. Each relationship with a partner is distinct, depending on how the missions of our respective organizations mesh and the resources each partner brings to the table. DGA has often provided initial seed money for the partner to bring on a part-time education coordinator, and we encourage and support partners' efforts to identify and access financial resources to make their regional program sustainable. DGA provides initial

orientation and mentoring as well as ongoing training and support for partners through biweekly video conferences, professional development, and an annual three-day training retreat for education coordinators.

Outcomes and Audiences

Dairy Grazing Apprenticeship's website is a portal through which both interested masters and apprentice candidates can apply to participate. Masters can hire an apprentice from the website list, recruit and hire independently, or even bring a family member or a current employee through the program. Historically, most farm businesses have been passed down from one generation to the next within families. A significant share of DGA participants are such families, reinforcing the premise of having a structured system for passing on generational knowledge.

With more than 60 percent of dairy farms reporting no successor, DGA also supports retiring farmers' efforts to identify a nonfamily apprentice or successor who will be a good fit for their farm (Lobley, Baker, and Whitehead 2010). Because DGA represents a unique farmer training opportunity, it has attracted interest from people with a range of experience, including those who have no farming experience and are interested in exploring a career change, dairy science graduates who are looking to gain hands-on experience to balance their classroom training, and people who have worked on large confinement dairies and see them as a dead end instead of a path toward an opportunity to own their own farm.

This broad array of experience, goals, and interests creates a challenge for DGA masters in selecting apprentices who want to learn but have the capacity to provide much-needed labor on the farm. When asked what qualities they look for in an apprentice, masters tend not to value farming experience as highly as other skills and aptitudes, such as being self-driven and being committed to learning; having life experience and maturity; having problem solving, critical thinking, and interpersonal skills; and having a realistic view of farming. Farming, especially dairy farming, is hard and often dirty work. Having a passion for farming and an affinity for animals is critical to being a successful dairy farmer.

DGA apprentices range in age from 18 to 53, with an average age between 28 and 30. About one-third are women. Apprentices come with widely varied backgrounds, from high school graduates to career changers with backgrounds in everything from health care to aviation to history. About 20 percent have postsecondary degrees in an agricultural field. When asked about long-term goals, a significant share of apprentices express interest in owning (40 percent), operating (13 percent), or working as a manager for (20 percent) a dairy farm. Others express their goals in terms of learning objectives, such as gaining skills to manage livestock (40 percent) or gaining farming experience (7 percent).

To date, DGA has graduated 31 apprentices. All but 3 have remained in the dairy industry despite its current economic challenges. Two have started their own farming operations, 9 are engaged in a farm succession relationship, 12 are in management-level positions, and 4 are working in the dairy industry service sector.

Challenges and Opportunities

As the first formal apprenticeship in agriculture, Dairy Grazing Apprenticeship straddles the worlds of traditional beginning-farmer training and traditional skilled-trade apprenticeship. Taking advantage of the best practices of each system, we have made great strides in these initial years.

The challenges we face stem primarily from the newness of the concept of apprenticeship within agriculture. Historically, dairy farms relied primarily on family labor and part-time help for day-to-day milking and feeding chores. For many DGA masters, their apprentice is their first full-time hire. DGA supports these farmers with fact sheets on identifying requisite skills, screening applicants, interviewing, onboarding new employees, and other hiring practices.⁴ We have also provided information and webinars on such skills as communication best practices, adult learning styles, and generational differences. Additional support is provided in the form of master roundtables, informal gatherings hosted by education coordinators for cohorts of masters that provide professional development in mentoring skills as well as peer-learning opportunities. Through these activities and through group education activities, DGA creates a peer-to-peer network among masters, apprentices, and journeyworkers that can provide mutual support and lifelong learning for all involved.

DGA has been funded in large part through US Department of Agriculture grant programs, but we seek to emulate other skilled trades that draw financial support from within the industries they serve. Traditionally, unions and private industry have supported training in the skilled trades. Although there are farmer organizations in agriculture, many of the financial resources collected through these mechanisms, such as “check-off” funds deducted from farmers’ milk checks, go toward marketing products. And DGA has been largely unsuccessful at soliciting funding from industry sponsors, except for several dairy cooperatives that see the training program as a means of serving their members. We believe that industry support will come as the dairy sector becomes more aware of the importance of professionalization of industry practices.

Our long-term vision is that the framework DGA creates will build a cultural awareness and commitment within the farming community to dairy grazing as a skilled trade and a profession. As dairy farming becomes more industrialized, grazing and organic dairies are a profitable, family-scale model that represent an attainable goal for a beginning farmer and can keep the complex craft of managing a farm business alive. The more skilled people we have in this profession, the more secure our food system will be.

Notes

- ¹ “History of Apprenticeship,” Washington State Department of Labor and Industries, accessed September 5, 2019, <https://www.lni.wa.gov/TradesLicensing/Apprenticeship/About/History/default.asp>.
- ² See the external-facing website for Dairy Grazing Apprenticeship at <https://www.dga-national.org/>.
- ³ “Census of Agriculture: 2012 Census Ag Atlas Maps,” US Department of Agriculture, National Agricultural Statistics Service, last updated February 22, 2019, https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Ag_Atlas_Maps/.
- ⁴ See “Public Resources,” Dairy Grazing Apprenticeship, accessed September 5, 2019, <https://www.dga-national.org/program/resources/public-resources>.

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7. Policy

In “Legislative Trends in Apprenticeship Policy,” Iris Hentze, Loryn Cesario, and Chelsea Canada talk about the genesis of apprenticeship and historical context for their chapter on the evolution of apprenticeship policy. Even for people well versed in apprenticeship programs, it is sometimes difficult to identify who is doing what in state government. The authors bring sense to the mysterious ways of state bureaucracy, even though navigation differs from state to state. Equally important, the authors identify trends among the 60 new apprenticeship laws passed by 30 states between 2016 and 2018, no easy feat. A composite of recent major legislation over the past two administrations concludes this chapter.

Lauren Hamilton Edwards and Deborah Williamson tie this section together in their chapter on using strategic planning to establish an apprenticeship program. In “Expanding Apprenticeships: Strategic Thinking for Plans That Matter,” the authors take an enlightened approach to strategic planning by emphasizing its dynamic and unique-to-an-organization nature. The chapter identifies the key elements of planning: the stakeholders, cornerstones, support beams, building blocks, leveling up, and communicating the plan. The value of a strategic plan is in the process, not the document, and “can help bridge the gaps between current and future workforces by ensuring the workforce remains relevant through economic and technological changes.”

With the increasing interest in building apprenticeship programs and the entry of new industries into its fold, this talent development model must evolve with employers’ needs. Diana Elliott, in “Competency-Based Occupational Frameworks: A Tool for Modernizing Apprenticeship,” describes a modern take on developing high-quality apprenticeship standards. Historically speaking, successful apprenticeship completion was tied to the number of hours spent on job functions, but Competency-Based Occupational Frameworks (CBOFs) prioritize demonstrated ability over the time it takes to reach proficiency. A competency-based apprenticeship model is all about on-the-job performance. Elliott describes the advantages of competency-based apprenticeship and its ability to better meet employers’ proficiency expectations than their traditional time-based counterpart. She also describes the process of creating an apprenticeship based on CBOFs and its value to employers wanting to launch a registered apprenticeship program or create a tailored program of their own.

Gina Wells, Jennifer Jirous-Rapp, and Brad Roller’s chapter, “State Efforts Expanding Apprenticeship Expansion,” is a valuable companion piece. The authors categorize the activities associated with apprenticeship legislation, such as strengthening business outreach and engagement, building pipelines of apprentices in conjunction with increasing diversity, and aligning career pathways and postsecondary education. The chapter also spotlights strategies for building awareness and increasing the business sector’s demand for and embrace of apprenticeship as a lucrative talent development tool. These pages are loaded with examples of best practices ranging from marketing the

apprenticeship model to leveraging partnerships to improving customer service and bolstering staff capacity to work with businesses on creating sustainable programs.

Legislative Trends in Apprenticeship Policy

Iris Hentze, Loryn Cesario, and Chelsea Canada

Apprenticeships have undergone significant changes, but they have always revolved around the idea of exchanging labor for training.¹ Originating in the Middle Ages, craft guilds were established to maintain the integrity and standards of various crafts while regulating competition.² The 1563 Statute of Artificers centralized the regulation of guild apprenticeships in England by establishing criteria for the duration of apprenticeships, formalizing the relationships between masters and apprentices, and limiting masters to three apprentices at one time.³ In contrast, the early American version of apprenticeship was largely agrarian and locally regulated, if regulated at all.

Colonial American apprenticeships were often characterized as indentured servitude. Typically, poor children were indentured around age 10 for roughly 12 years. In these cases, parents transferred the child's legal authority to a master craftsperson, who was responsible for teaching the craft, reading, and writing to young apprentices. Several notable historical figures spent their youths as apprentices, including Benjamin Franklin, Paul Revere, and George Washington.⁴ The shift away from apprentices and indentured servants began in the early days of the republic. As the narrative of an independent nation took shape, so too did the notion that enforcing long-term indenture contracts was burdensome to masters and apprentices. Additionally, as industrial work became dominant, apprentices could pursue wages in factories rather than often-unpaid work or deferred wages as an apprentice.⁵

Following the Civil War, a shortage of skilled laborers prompted industry, organized labor, and governments to partner in new ways. As industrial work became specialized, several industries, from iron foundries to shipbuilding to print shops, adopted the apprenticeship model.⁶ During this time, trade schools began to offer coursework to substitute for some aspects of traditional apprenticeship.⁷ In 1865, the Pennsylvania Railroad became one of the first companies to implement a graduated wage scale for apprentices.⁸

In 1911, Wisconsin passed the first legislation associated with apprenticeship programs in the United States. The statute created the first registered apprenticeship system. Under this law, apprentices were required to attend at least five hours of classroom instruction each week.⁹ The federal Smith-Hughes National Vocational Education Act of 1917 followed the Wisconsin legislation. The act designated federal funds for vocational training and came in response to the increased need for skilled labor following the United States' entry into World War I.¹⁰

The most comprehensive legislation dealing with apprenticeship in the United States is the 1937 National Apprenticeship Act, also known as the Fitzgerald Act. Born out of the National Industrial Recovery Act following the Great Depression, the Fitzgerald Act established the Registered Apprenticeship Program within the US Department of Labor as we know it today. Immediately following the act's passage, apprenticeship programs were founded mainly in manufacturing, construction, and

utilities. Since World War II, apprenticeships have expanded into public safety and first-responder jobs, as well as health and medical occupations.¹¹

State Action and Trends

Today, states use apprenticeships to help build a qualified workforce prepared for 21st-century jobs. Apprenticeships, as a policy approach, involve many stakeholders and government agencies that coordinate and implement these programs. Stakeholders include the state's labor department, the state's department of education, community and technical colleges, high schools, and businesses. Policy approaches vary depending on the goal of the state enacting it and what the state already has in place. State legislatures create and fund apprenticeship programs. Legislatures also find ways to provide incentives to participants and host employers to mutually participate in these programs. Some approaches include strategies to ensure credit obtained from these programs meets traditional school credit requirements and requirements for licensure or accreditation toward a specific occupation.

Between 2016 and 2018, 30 states passed 60 new apprenticeship laws.¹² About half the laws enacted during this time established new apprenticeship programs or created new requirements for existing programs. In 2019, the Montana legislature passed a bill to create a pilot program for public-private partnerships to increase skills training in targeted industries and job-readiness programs for target populations.¹³ This is an example of a state creating a new program. Even if states are not creating new apprenticeship programs, states oversee these programs continually. Each budget year, state legislatures appropriate funds to community and technical colleges within the state's education system for apprenticeship program administration. This is a legislative decision to continue providing direct funds to implement these programs year after year.

Another strategy states have adopted to implement apprenticeships involves targeting specific demographics, such as youth, typically students in the K–12 education system. This strategy is common internationally. At least 50 percent of youth in Austria, Germany, and Switzerland participate in apprenticeships, compared with less than 5 percent in the United States.¹⁴ In 2019, the West Virginia legislature approved a bill to allow candidates to apply their training hours—earned through career and technical education provided by the state's public schools, an apprenticeship program, or an employer-sponsored training program—toward the requirements for certification or licensure in the same occupation.¹⁵ This legislation also requires school districts to provide high school students classes aimed at general workforce preparedness.

Virginia's legislature in 2018 authorized "high school to work partnerships."¹⁶ This legislation creates a system that requires the state's Board of Education, the Department of Labor and Industry, and the Board for Community Colleges to identify partnerships eligible for exemptions from certain federal and state labor laws and establish procedures to implement them. Once approved by the school

board, high school students can participate in an apprenticeship, internship, or job-shadow program in various trades and skilled labor positions.

States are not only targeting apprenticeships toward youth but finding ways to market these opportunities to populations where they are traditionally underused. California approved a measure in 2016 to increase representation of women in the skilled building and construction trades.¹⁷ The legislation requires preapprenticeship programs in the building and construction trades, funded by the federal Workforce Investment and Opportunity Act (WIOA), to develop plans for outreach, recruitment, and retention of women.¹⁸ The New Jersey legislature is considering legislation to establish an apprenticeship mentoring program for women, minorities, and people with disabilities.¹⁹

Pay incentives, in various forms, are an increasingly popular strategy to encourage stakeholders (e.g., students, businesses, and educational institutions) to participate in apprenticeship programs. States currently offer tax incentives to employers in exchange for hiring new apprentices and supporting these programs through purchases of property or equipment. Some states have also extended these pay incentives to participants of qualified programs. States do not have a prescriptive approach to this policy lever, and incentives vary. This year, several states, including Nebraska,²⁰ authorized tax incentives to encourage employers to host apprentices. These incentives were based on such factors as how many apprentices an employer hosted, how many hours an apprentice worked, and how much the employer paid the apprentice. Other states have already used this strategy to increase the number of apprenticeships offered by employers. In Nevada, qualified property provided by an employer for an apprenticeship program is exempt from taxation.²¹ Eligible businesses in South Carolina can receive a \$1,000 tax credit for each registered apprentice employed during a set period.²²

States also offer pay incentives to participants of workforce training programs, such as apprenticeships. The Iowa Jobs Training Program provides \$1 million in funding a year to support job training services to employees who are registered apprentices at eligible businesses.²³ During Kentucky's most recent legislative session, lawmakers approved an expansion of the Kentucky Educational Excellence Scholarship to participants of eligible workforce training programs.²⁴ Participants must work in one of the five highest-demand work sectors determined by the Kentucky Workforce Investment Board.

States use policy to integrate apprenticeship efforts with the state's workforce development and realignment efforts. This method includes coordination among stakeholders and promoting this alternative training method to the appropriate entities. The Arkansas legislature this year created a comprehensive statewide workforce development system to coordinate various workforce development programs.²⁵ As a part of this realignment effort, state offices involved in education and workforce development are developing and overseeing a comprehensive apprenticeship office that is the center point for business, industry, and education leaders who want to establish an earn-to-learn apprenticeship program. Another example of this coordination among stakeholders was seen with the passage of S.B. 372 in the New Jersey Legislature.²⁶ This legislation requires the commissioner of

education and the commissioner of labor and workforce development to develop guidelines for high school counselors to use to coordinate services with representatives of the New Jersey State Building and Construction Trades Council. This legislation aims to encourage student participation in apprenticeships and increase awareness of apprenticeship opportunities.

Federal Action

Interest in apprenticeships is bipartisan at the federal level. The Obama administration invested in various apprenticeship programs, and Congress approved \$90 million in 2016 to expand registered apprenticeships in several sectors.²⁷ In 2017, President Trump signed the Expanding Apprenticeship in America executive order, nearly doubling federal funding available for registered apprenticeship programs.²⁸ The Trump administration continues to support apprenticeship policy through a new Department of Labor website promoting apprenticeship programs and operating as a hub for apprenticeship resources. Apprenticeship.gov houses apprenticeship information for job seekers, employers, educators, and others.

Federal funding for registered apprenticeship programs is available to state and local governments, businesses, industry associations, education institutions, and others through various federal agencies (ETA, n.d.). Funding for registered apprenticeship programs from the Department of Labor is allocated through WIOA, the largest source of federal funding for workforce development activities. WIOA funding can support workforce development and registered apprenticeships in several ways, including providing job search, education, and training services.

Since WIOA's enactment in 2014, significant efforts to ensure state apprenticeship programs are registered with the Department of Labor have been under way. Registered apprenticeship programs align paid on-the-job learning and academic instruction to help apprentices gain skills and work experiences attuned to industry needs.²⁹

In 2018, the Department of Labor awarded nearly \$50 million to 37 states to support efforts to expand apprenticeship programs.³⁰ This funding helps state grantees expand apprenticeships into new occupations and industries, increase diversity among apprentices, create new career pathways into apprenticeships, and increase the number of people completing apprenticeship programs. This funding builds off the first round of State Apprenticeship Expansion Grants from 2016 (ETA 2016). Recipients of the first and second round of funding are working toward 15 percent growth of registered apprenticeship programs in their states.

Policies supporting apprenticeship programs are popular with Congress as well, producing several bipartisan efforts in recent years. In 2018, Congress passed the Strengthening Career and Technical Education for the 21st Century Act.³¹ Sponsored by both Republicans and Democrats, the act reauthorizes the Carl D. Perkins Vocational and Technical Education Act of 2006, simplifies the

application process states must adhere to when applying for federal career and technical education funding, allows states to set related performance measures for students in these career and technical education programs, and allows states to align their funding and programs with local in-demand jobs. In 2018, lawmakers also launched the bipartisan Apprenticeship Caucus to explore ways Congress can support apprenticeships to help workers get jobs.³²

In 2019, several apprenticeship-related bills are under consideration in Congress. One example is the Apprenticeship Hubs across America Act, which, if passed, would promote registered apprenticeships within in-demand industry sectors through workforce intermediaries such as business or industry organizations, institutions of higher education, and state or local boards.³³ These workforce intermediaries would be eligible for grant funding from the Department of Labor to engage stakeholders to help support, develop, and implement registered apprenticeship programs.

Congress is also considering the American Apprenticeship Act, allowing the Department of Labor to make grant funding available to states to help them with instruction-related costs associated with preapprenticeship and apprenticeship programs.³⁴ The bill features a pair of bipartisan sponsors and would make the grant funding available to states through a competitive application process.

A third example is the Support for Veterans in Effective Apprenticeships Act, in which Congress is considering apprenticeships as a strategy to assist specific populations in finding work.³⁵ Featuring a bipartisan group of cosponsors, this legislation aims to improve apprenticeship program coordination between the Department of Labor and the US Department of Veterans Affairs by clarifying rules and procedures. The bill would also allow veterans receiving educational assistance because of their service to put those benefits toward a registered apprenticeship program.

Notes

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Expanding Apprenticeships: Using Strategic Thinking for Plans That Matter

Lauren Hamilton Edwards and Deborah Williamson

Strategic planning is a common management practice for many organizations, especially for those with economic development and job programs. Well-thought-out and dynamic strategic planning can be a powerful guide for states embarking on workforce planning, including apprenticeship programs.

We often think about an old IBM commercial that ends with a reminder to “stop talking, start doing.” Management researcher and guru Henry Mintzberg wrote that strategic planning suffers from three major fallacies: prediction, detachment, and formalization.¹ The first fallacy is prediction. Analysis should be done to understand the organization and its place in the world, but the world does not remain constant while planning takes place. Likewise, analyses indicate that planning needs an unbiased analyst, which leads to the second fallacy, detachment. Strategic thinking instead requires fully engaged planners to be intimately involved in the tasks and practices that make the organization work. The final fallacy is formalization. Mintzberg argues that formalizing strategy defeats the purpose of strategy. Being open to and embracing change and learning as you go is actually at the root of strategic thinking.

Planning can produce a meaningful strategic plan to overcome these obstacles. This requires strategic *and* analytical thinking on the part of legislators, commission members, workforce service providers, and community members to engage in a meaningful process to understand why apprenticeship programs are needed and how these programs can affect a state’s economy and social well-being. Strategic planning can help bridge the gap between current and future workforces by ensuring the workforce remains relevant through economic and technological changes.

In its quest to expand apprenticeships nationwide, the US Department of Labor Employment and Training Administration launched competitive state expansion grants in 2016 under the ApprenticeshipUSA initiative (ETA 2016). The initiative called for states to submit strategic work plans designed to encompass the duration of the funding period and include necessary elements for successful strategic planning. We believe that many of the successes realized and the continuity of federal funding to the states is because of the development and adherence to state strategic work plans. In this chapter, we look at strategic planning as a means to achieve robust apprenticeship programs locally and statewide.

Strategic Planning: A Meaningful Process for a Robust Plan

A colleague once said that the only use for a strategic plan is as a doorstop, heavy but otherwise useless. This perception is common, albeit not always stated so explicitly. When we discuss strategic planning, we often envision only the final product, documents brought out with the best of intentions for meetings. But planning can include more opportunities for strategic thinking throughout the process, as Mintzberg outlined. This is important for all types of workforce planning, as analysis and strategic thinking should go hand in hand to ensure a stable, vibrant workforce.

In this section, we describe the elements of strategic planning. These should not be read as steps in planning or necessary for each process. There are even times when programs should not plan. Each strategic plan should be individualized and differ based on context. A one-size-fits-all approach for planning does not exist because organizations differ, even within the same industry. Space and time also differ and affect planning. Organizations and programs should consider what types of planning they should engage in and which elements should be included in the process, given their unique needs.

Planning to Plan

This may seem redundant. It always reminds us of organizations having a team to coordinate other teams and work groups. But given our belief that the process matters, this is a crucial step. There are several key elements to consider during this portion: who, when, and where. Planning to plan also helps set the program's nomenclature and defines key terms so that all involved understand the nature and meaning of the concepts discussed. Although seemingly simple on its face, the word "apprenticeship" has no standard definition—is it an internship, a practicum, an externship, a co-op, a preapprenticeship? In short, careful planning sets the tone for robust planning and clarifies misconceptions or misinformation up front.

WHO SHOULD PARTICIPATE IN PLANNING?

Including stakeholders, especially in the public sector, is important, but which stakeholders are needed at each step along the way? The following questions will help you:

- Who counts as a stakeholder?
- What do we need from stakeholders: information, buy-in, support, or all three?
- When should stakeholders be involved?
- How should stakeholders be involved?

STAKEHOLDERS

Bryson, Patton, and Bowman (2011) define a stakeholder as anyone affected by the planning. They also point out that stakeholder analysis is important, as no public problem can be solved without attending to the interconnected nature of our world. This is also true in planning and implementing apprenticeship programs. You cannot understand a state's workforce needs without community input. Participants at Kentucky's recent apprenticeship summit included representatives from the business community, community-based organizations, community colleges and universities, the legislature, government agencies, and apprentices (even a welcome from Governor Matt Bevin). These representatives' combined knowledge and experiences can create plans that ensure the right communities of workers obtain the right skills for the current workforce.

You should also know what you need from stakeholders. Some stakeholders may hold information you need. For example, to complete a SWOT (strengths, weaknesses, opportunities, and threats) analysis, you need to engage labor analysts to understand the current workforce. Other stakeholders will need to buy in or at least not stand in the way of the future plan. What is the use of planning if community-based organizations tell clients a program is not worth their time? How much better would it be to have partners that support the plan because they feel a sense of ownership in the plan's outcomes? Understanding what you need from each stakeholder will help you understand when and how they should participate.

Two types of analyses can help you decide who should be involved. The first task is to lay out who should be included in the process and why. A simple table or spreadsheet can help you think about who has an interest in apprenticeship programs and what stake they have in planning such programs. Then, you can decide how each stakeholder should be involved. The most common analysis used is an interest and power grid (figure 1). By laying out stakeholders' interest and understanding their power in the process, you can make informed decisions about how and when they should be involved in planning.

FIGURE 1

Interest-Power Grid

		Power	
Interest	Clients <i>High interest but very little power</i> Needs: Information sharing and buy-in Involvement: Could be part of planning, needs information during implementation Examples: Community-based organizations in touch with potential apprentices; former apprentices	Players <i>High interest and powerful</i> Needs: Information, buy-in, and support Involvement: Partnership throughout planning and implementation of the plan Examples: Community colleges and universities, industries that rely on apprenticeships, state and local workforce development organizations, legislators directly involved in relevant communities	
	Crowd <i>Slightly interested and no power</i> Needs: Information sharing Involvement: Information sharing in planning, needs information during implementation Examples: Community members, analysts from various state agencies	Context Setters <i>Highly powerful but slightly interested</i> Needs: Support Involvement: Information sharing throughout planning and implementation of plan Examples: Industry leaders, local and state legislators	

Source: Adapted from John Bryson, Michael Quinn Patton, and Ruth A. Bowman, “Working with Evaluation Stakeholders: A Rationale, Step-Wise Approach, and Toolkit,” *Evaluation and Program Planning* 34, no. 1 (February 2011): 1, and Colin Eden and Fran Ackermann, *Making Strategy: The Journey of Strategic Management* (London: Sage Publications, 1998).

OTHER CONSIDERATIONS

Following the stakeholder analyses, you should decide how to include stakeholders in the process. The crowd should be brought in as needed and as consumers of the finished plan. Clients are needed to help planners understand community needs and how apprenticeships work from the program participants’ points of view. This information can be gathered through surveys, interviews, or focus groups. A few representatives from this group can also be included on the planning team. Context setters should be kept informed about the process and included as they have time and interest. Players should be included early and often through committees and advisory boards.

Though the analyses should help, no part of strategic planning is appropriate for everyone. Also, analyses should be updated. Your analysis might classify a former apprentice as a client. Because you need information about the program she completed, you include her in a focus group. During the focus group, you recognize that this person is enthusiastic about apprenticeship programs and is moving up in her industry. You can think about updating your interest-power analysis to classify her as a player because of her potential. This person could provide information from a participant’s point of view, as well as enthusiasm, during the planning process. She would also benefit from her service because of opportunities to build her own network and standing.

Though we often think of the how and when of planning as secondary considerations, these can affect stakeholders’ willingness to participate. Stakeholders classified as players should be involved in the process early and often. Asking people for their input after important decisions have been made can

signal that you do not care what they have to say or can make them feel like an afterthought. Stakeholder analysis can ward off offending important players.

Meeting space, whether for a small gathering or a large affair, should also be attended to with care. If in-person meetings are needed, you should consider when the most people will be able to attend and how people will travel to the location. In-person meetings include kick-off meetings, retreats, and information-gathering events. Space can influence how people participate. Neutral locations, such as local schools or nonprofits, tend to be welcoming. Neutrality can be important for interviews and focus groups, for example, when a conference room might feel cold or impersonal. On the other hand, smaller groups might enjoy coming to official spaces that offer sophisticated technological amenities. You should also consider whether food should be offered. Time and place are important for stimulating innovative thinking, group participation, and getting the most out of meetings. Time and space also underscore the importance of the process and sends a strong message to participants about the necessity of their involvement—a commitment that is worth their time.

Technology can also be helpful, as in-person meetings are not always needed. Different platforms may be more cost-effective than accommodating travel and other needs. Online surveys can help you collect data quickly from more people. Other platforms can allow you to hold meetings without travel, making better use of your participants' time when short meetings are needed quickly.

A final consideration is whether to bring in a consultant or facilitator. Either can smooth out any tensions by virtue of being a neutral, external person leading the effort or bringing together various stakeholders needed for workforce planning. I (Lauren) do not think programs benefit from having a consultant complete most of the work, though. The players should be involved in the process to ensure ownership and support in the final plan.

The Cornerstones: Missions and Values

Missions and values are the cornerstones of any good plan because making these ideas explicit can root the process and plan in what is important to a program. A well-stated mission statement can unite members of a planning commission or board who come from different sectors and industries. Stating the group's values can likewise guide strategies. As aptly noted by Collins and Porras almost 30 years ago when referencing Procter & Gamble, Hewlett Packard, 3M, and others, "Companies that enjoy enduring success have core values and a core purpose that remain fixed while their business strategies and practices endlessly adapt to a changing world."²

Vision usually follows mission. When Lauren facilitates planning, visioning is one of the most enjoyable parts of the process. She asks participants what they want to see in their organization over the next few years, to envision an ideal future or model they aspire to emulate. What usually follows is one of the most meaningful conversations throughout the process, calling on participants to engage in creative "what if" scenarios and explore how they might attain a desired vision. She uses the visioning

process instead to help organizations update their mission and lay out their values. Many still craft a vision statement, and if others find it helpful as a way to challenge entrenched thinking and embrace inevitable change an organization will experience (e.g., works by Jim Dator³), who are we to argue?

We qualified mission statements with the phrase “well-stated.” In a recent podcast episode, Oprah Winfrey told a story about a conversation she had with a janitor at a news station early in her career.⁴ He told her about his pride working in the news business. A clear mission can unite everyone around the purpose of a program or organization, from the bottom of the hierarchy to the top. But a mission statement can help only if it is clear and concise. When you plan with people from different organizations, you may feel it necessary to account for the part everyone plays in workforce development. But this can lengthen and muddle the mission statement to a point where no one finds it useful. The best statements are short and concise, easy to remember and repeat. In *Hamlet*, Shakespeare wrote that “brevity is the soul of wit.” Far be it for us to improve on Shakespeare, but we would like to add that brevity is the soul of good communication. We particularly like the phrase we found on the website for the Rhode Island Governor’s Workforce Board: “Train for success—connect for growth.” This phrase is short and simple to remember yet communicates precisely what the board is trying to do.

Identifying values can be equally important. A values statement can support the entire process. For example, the Texas Workforce Commission lays out its philosophy in its most recent strategic plan, which includes both its core beliefs and values. One of these core beliefs is that the commission “believe[s] that there must be a skilled worker for every employer and a job for every Texan that wants one.” This statement should ground the commission as it thinks about apprenticeship programs and matches programs to employer needs and the available workforce.

Support Beams: SWOT Analysis

Several analyses should inform planning for apprenticeship programs that can help governments better understand their future workforce, including a current workforce profile, a future workforce profile, and a SWOT analysis. Strategic planning in this area should bridge the current workforce with future needs. Though it may be difficult to predict what trades and skills will be needed in the next decade, informed forecasting can ensure the gap is at least partially covered. The Texas Workforce Commission labels its current workforce profile on its own agency as “supply” and the future workforce profile as “demand.” The current workforce supply should meet the future workforce demand. But the analyses are only as good as the honesty with which they are completed, taking a close look at the workforce environment.

The first two processes, a workforce profile and a future workforce profile, are often completed by labor departments in the states and should be used by strategic planning teams. Most states complete an annual labor force or market analysis that breaks down the current workforce by locality and labor force participation. Many have additional information. For example, Maryland’s annual report includes a

list of promising occupations by level of education and includes salary information. The website also includes a brochure about “hot jobs” and an information sheet on cybersecurity, predicted to be a growing field. This information is helpful for people choosing careers and for planners across the state to think about which fields would benefit from a new apprenticeship or how to strengthen current apprenticeships. Community colleges and universities often use this type of analysis to create and implement new degrees to make sure they are matching their graduates with jobs.

These profiles can then help with SWOT analysis, which shows an organization’s internal strengths and weaknesses and the external opportunities and threats the organization faces. SWOT is not about a particular organization. Instead, it can be used to analyze current apprenticeship programs to learn more about where the state should focus resources, such as time, money, and strategic thinking.

Though SWOT analyses contain information from other sources, the committee or board should not completely outsource this portion of planning. The conversation surrounding the analysis can show how different people see the same issues. Say construction on a new car plant will begin in the next fiscal year. Economic development representatives may see this as a massive opportunity. But the current auto manufacturing representative may see it as a threat in terms of competition for workers, not to mention how labor unions judge the additional jobs and the status of union representation in the new plant. Community college and technical school representatives may view the new plant as a mixed blessing, as even the strongest apprenticeship programs may find expanding offerings difficult. An honest conversation between all players could clarify which parts of the state need support. Perhaps the education sector needs funding from the new plant to ensure its capacity is in line with the plant’s needs. This can also help separate interests see that everyone is on the same team, at least in forming strong apprenticeship programs. In the end, doing the analyses is more important than simply having a complete analysis.

Carefully executed, SWOT analyses can bolster confidence among internal stakeholders regarding work processes and deliverables and can encourage critical appraisal of things requiring improvement in a safe and comfortable setting. The planning activity also sends a message to internal stakeholders operating at different levels of an organization that their daily contributions matter to the entire entity, and their participation in the planning helps chart a course for the organization’s future.

Table 1 contains questions to consider when completing a SWOT analysis. Opposing values are separated by an and/or. As is often true for people answering the strengths-or-weaknesses question in an interview, a program’s strength can also be a weakness.

TABLE 1

Questions to Consider When Completing a SWOT Analysis

Internal: Strengths and/or Weaknesses
What are we doing well? What could we improve?
How are local programs performing? Are there any standouts?
Have any local programs had to end? If so, what can we learn?
External: Opportunities and/or Threats
What are other states doing that will compete with our programs?
Are any new industries or companies opening up in new locations? Are any shutting their doors?
Are there any new federal grant programs?
Are there any new federal mandates about apprenticeship or training programs?
Where are there current gaps between the needed workforce and the current workforce?

An additional technique that many planners and organizations find useful is the TOWS matrix, developed by Weihrich (1982). Derived from a completed SWOT analysis, this schema pairs internal factors with external factors to better understand SWOT. The TOWS schema can lead to better planning. This process in Kentucky demonstrated the apprenticeship program’s position in the state was an internal strength and was paired with the strong position of other executive level agencies. This helped those involved in the apprenticeship strategic planning process see that they needed to partner with these agencies at the cabinet level, including the personnel cabinet. These partnerships eventually led to innovative civil service apprenticeships in state and local government agencies.⁵

Another example from Kentucky pairs an internal weakness and external opportunity. The analysis showed that scholarship opportunities abounded in the state but were limited for apprentices. Advocates for apprenticeship, who in this instance included local high school students, convinced the state legislature and the governor that the Kentucky Educational Excellence Scholarship benefits should be extended to apprentices, improving opportunities for students who normally could not participate in the program.⁶ When weaknesses are paired with threats, the plan should address contingency plans to address weaknesses or affect the environment before the potential problems arise.

FIGURE 2

TOWS Matrix

Internal elements External elements	Organizational strengths	Organizational weaknesses
	1. 2. 3.	1. 2. 3.
Opportunities	Strategic options	
	Strengths-opportunities	Weaknesses-opportunities
Threats	Strengths-threats	Weaknesses-threats
	1. 2. 3.	1. 2. 3.

Source: Adapted from Heinz Wehrich, "The TOWS Matrix—A Tool for Situational Analysis," *Long Range Planning* 15, no. 2 (April 1982): 54.

The Building Blocks: Goals, Strategies, and Action Plans

Everyone has their own terminology for labeling this section of a strategic plan. Here is what we mean with our terminology (you may choose to label items differently or have more levels):

- **Goals.** The program’s top-level focus areas
- **Strategies.** The ways programs will meet their goals
- **Action plans.** The substrategies or to-do lists for completing strategies

GOALS

Goals, like the mission, should be clear and concise, particularly for communication purposes. In this section, we use the example of creating new cybersecurity apprenticeships over three years because the SWOT analysis demonstrated that more businesses need cybersecurity analysts, and current technological programs do not focus on this sector. “Create and implement new, innovative cybersecurity apprenticeships” does not easily roll off the tongue or fit neatly on a brochure. “Build Innovative Cybersecurity Apprenticeships” gets the same idea across with fewer words and conveys immediacy in action. The idea is to build communication and unify the various players, not to cover everything in the goal. The rest can be covered with strategies and actions. Some organizations have a short goal with an explanatory sentence underneath, which accomplishes the same idea.

When we facilitate or teach strategic planning, we are often asked how many goals are needed. The answer is that it depends. We are also asked how many years a plan should cover. The answer is the same. Some organizations like to have a 10-year plan with 8 to 10 goals. Others like a shorter period with fewer goals. There are many considerations, but you should consider new mandates, political terms, and changes in the economic climate. The final consideration is attaching performance measures

to each goal. This step will help you understand whether you have reached the stated goal or are at least working toward the goal. This step is covered in the Leveling Up: Performance Plans section below.

STRATEGIES

Once you agree on the overriding goals, strategies lay out how programs will reach those goals. These strategies need to be more detailed than goals. Programs can decide on strategies in two primary ways. The first we call the garbage can model. Participants can be more free thinking because ideas can be “thrown away” with participants’ consensus. The second way is more structured, with ideas coming from a small group of participants. The final is based on the pairings discovered in the TOWS matrix. Regardless of method, strategies should be chosen with several criteria in mind: efficiency in terms of cost and time, effectiveness in meeting the goal, and whether the strategy can feasibly be accomplished with the current resources.

The conversation around strategies is important for making the best decisions. In our cybersecurity example, the first strategy could be to find out which regions would benefit most from an apprenticeship program. Because resources are finite, the state needs to know where to target investment. A technical school representative might believe her school has the best capacity to begin a program quickly and does not think this strategy is necessary. An industry representative might point out that most businesses that need cybersecurity analysts are not in the same region as the school. To complicate the idea further, a representative from the state’s workforce and labor department might demonstrate that most new graduates who studied technology are elsewhere in the state. This example demonstrates not only the need for the strategy but the importance of conversation.

ACTION PLANS

Action plans are best done by small teams within a larger agency, commission, or board. Action plans are like a to-do list or project management for achieving each strategy. In the cybersecurity example, a team could debate the best way to get needed information (e.g., interviews, surveys, or both) and then be in charge of making sure the task (i.e., determining where to place new cybersecurity programs) is completed. Most action plans are laid out in a table that shows tasks, timelines, resources, communication plans, and leadership. Laying out budget amount and source is particularly important for a collaborative effort that includes input from various players. Additionally, with so many choices for keeping up with a project across a group, communication preferences and plans are important. Examples include email, Google Groups, Google Drive, Office Online, or even a website such as webwhiteboard.com, where you can collaborate online.

A Google search will net many examples of action plans. Table 2 is a sample action plan we have updated from the Community Tool Box website from the University of Kansas.⁷

TABLE 2

Sample Action Plan

Action plan: _____

Task	Lead	Start	Deadline	Budget amount and source		Communication plan
				Secured	Needed	
What needs to be done?	Who will do or lead the task?	When should the task begin?	When should the task end?	What is the current amount of funding secured for the task? Where is it coming from?	Is any more funding needed? What are the possible funding sources?	How will the team communicate? Who needs to know when the task is completed?

Leveling Up: Performance Plans

What does success look like? How will we know we did a good job? These are some of the most important questions we can ask about plans, programs, processes, and organizations. Performance is often considered after plans are in place or is added to make the plan look better. Whether performance metrics are truly considered is another matter. We have a colleague in charge of performance management in a state agency. She told us she keeps many spreadsheets of data in the name of performance that no one looks at but her. This is often the case, as we have unlimited possibilities for collecting and storing data. We are not always sure about how to use the data we have collected. Collecting the right data (qualitative or quantitative) for the right uses will help us determine whether we do a good job. And that requires planning.

Robert Behn (2003) outlines eight reasons for performance measurement: evaluating, controlling, budgeting, motivating, promoting, celebrating, learning, and improving. Each purpose requires different measures. Understanding the purpose and what needs to be measured as part of the strategic planning process can ensure the correct data are collected for the correct purpose. Behn further argues that searching for the single best measure to determine whether we are doing a good job misses the point. Programs are complex and made up of many moving parts. What looks like success to the state is different than what success looks like for an apprenticeship program, which means that different perspectives should be taken into account. Data in terms of completion rates and graduate earnings can be compiled at the state level only if there is a plan in place to do so. Other data, such as narratives from apprenticeship graduates about how a program has changed their career trajectory, can also be meaningful. This is more than a story but data about the program that numbers alone could never communicate, as demonstrated by Lerman, Marotta, and San Miguel's (2019) research on Kentucky's Civil Service apprenticeship program. This could be a chapter on its own, but we will end with a suggestion that the question of performance can be part of the planning process.

Communicating the Plan

Not all stakeholders need to be involved throughout the entire process. Some stakeholders, the crowd and the context setters, need information about the plan. Everyone needs to see the plan come to fruition. Communicating the plan is part of the process. Having the plan featured widely and broadly can ensure all stakeholders keep the state accountable in moving the plan forward. Having the plan on a website is an important first step. Making sure the presentation is for public consumption is also important. Many plans live on websites as PDFs, neither easy nor exciting to read. A landing page with goals, strategies, and pictures gets the information across better. Pictures could show trainees learning a trade, apprentices graduating, or stakeholders planning.

Some organizations and programs make brochures or handouts to give out at job fairs or other public gatherings. We understand the initial thought that the general public does not care about strategic plans. Strategic plans, like budgets, can be public-facing documents that relay program priorities. Communicating the plan to the general public also communicates a commitment to the state's workforce and citizens' personal well-being. This communication in the right hands shows that people have choices in their future careers and their state is at the forefront in creating programs to fit their needs.

Connecting people to training for the future is the purpose of workforce planning. Planning for the sake of planning will never give a state the workforce it wants or needs. That requires including the right people in the process, a willingness to have hard conversations, and an understanding that strategic thinking will create a plan that works for the state.

Notes

- ¹ Henry Mintzberg, "The Fall and Rise of Strategic Planning," *Harvard Business Review*, January/February 1994, 107.
- ² Jim Collins and Jerry I. Porras, "Building Your Company's Vision," *Harvard Business Review*, September/October 1996, 65.
- ³ See "Introduction to Dator and the Manoa School," School of International Futures blog, March 3, 2014, <https://www.soif.org.uk/blog/introduction-dator-manoa-school/>.
- ⁴ "David Brooks: The Quest for a Moral Life," interview by Oprah Winfrey, *SuperSoul Sunday*, May 19, 2019, video, <http://www.oprah.com/own-super-soul-sunday/david-brooks-the-quest-for-a-moral-life>.
- ⁵ Tom Latek, "Apprenticeship Program Announced for Social Workers in Ky.," *Kentucky Today*, May 15, 2018, <http://kentuckytoday.staging.communityq.com/stories/apprenticeship-program-announced-for-social-workers-in-ky,13305>.
- ⁶ Kendra Peek, "Boyle Students Celebrate Involvement in KEES Bill Passed by State Legislature," *The Advocate-Messenger*, April 20, 2017, <https://www.amnews.com/2017/04/20/boyle-students-celebrate-involvement-in-kees-bill-passed-by-state-legislature/>.

- ⁷ “Chapter 8, Section 5: Developing an Action Plan,” University of Kansas, Center for Community Health and Development, Community Tool Box, accessed August 6, 2019, <https://ctb.ku.edu/en/table-of-contents/structure/strategic-planning/develop-action-plans/main>.

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Dairying in Harmony with Nature

Brittany Olson

Even though a downpour during their pasture walk was not well timed, dairy farmer John Richmond was grateful for the rain nonetheless. The pastures were beginning to look parched.

“The alfalfa is still growing, but all of the cool-season grasses had gone dormant,” Richmond said.

Richmond, who milks around 200 cows near Colfax, Wisconsin, with his wife, Chelsea, purchased the milking herd from master grazer Charles Flodquist when Richmond finished his program under Flodquist with the Dairy Grazing Apprenticeship last year. Chelsea, who works off the farm as a math teacher, helps on the dairy as well.

Flodquist and Richmond entered into the apprenticeship with the goal of transferring the farm business. Flodquist had no children interested in taking over the family farm and needed a successor. The transfer is a work in progress. “I bought the cows in January and didn’t get my first milk check until February,” Richmond said. “I’m keeping my first 80 pregnant cows this year and selling the rest that calved in prior to and during this spring. I am also running cows with the bull some to save semen, which I do anyway if they don’t take to their first two services with [artificial insemination].”

During the pasture walk, Richmond explained that even during periods of depressed milk prices, he is not afraid to try new things to make the farm more environmentally friendly, including planting varieties of forage to improve nutrition and soil biology while reducing erosion and nutrient loss in the hills and valleys.

“I’m all about variety with farming practices to farm in a more eco-friendly way,” Richmond said. “I am always throwing something new in the grain drill to see what comes up, like Balansa clover and hairy vetch. I figure that as long as it isn’t tall fescue, which isn’t very palatable to cows, you’re golden.”

That love of variety also carries over into the milking cows, comprising Holsteins crossed with Normande, Fleckvieh, Brown Swiss, Ayrshire, Montbéliarde, and Jersey. Richmond breeds for strong udder attachment with plenty of bloom combined with the stronger stature and muscling of dual-purpose cattle.

“If it looks like a Holstein, it gets bred to something else, and if it looks like something else, it gets bred to Holstein,” Richmond said. “I’m expecting to milk cows and ship beef when their productive life is done. I’m looking for beef stature with 92-point udders.”



John Richmond grins during a deluge while hosting a pasture walk. Photo courtesy of *Dairy Star*.

The cows are pastured 365 days a year on 380 acres at the home farm with 40 acres across the fence line and 72 up the road, with additional feed harvested in the form of baled hay, baleage, and corn silage. They are fed round bales on certain pastures throughout the winter to boost soil fertility through manure and trampling of feed through the snow to build organic matter.

“Manure is like glue,” Richmond said. “It sinks through the snow and stays there on the soil surface. You can see circles on those pastures after overwintering where the grass is greener and more lush.”

Not long after purchasing the cows and waiting for his first milk check to arrive, Richmond found himself out of grain corn in the dead of winter. It ended up working out because he plans on returning to a grain-free ration once winter arrives and the grazing season ends.

“Between the grass, baleage, and corn silage, we are 100 percent forage fed,” he said. “There was an initial drop in milk, but the components came up, so the milk check was almost the same.”

Richmond said throughout the summer, he has returned to feeding four pounds of grain per milking.

“As soon as the grass started to green up and I ran out of corn silage, I had to start feeding grain in the parlor again to bring my [milk urea nitrogen levels] down,” Richmond said. “But once the grazing season is finished, I will gladly switch their diet back to corn silage and baleage. The more we can stay away from grain, the healthier the cows have seemed to be.”

Between keeping things as natural for the cows as possible while incorporating innovative practices to keep the farm environmentally and fiscally sustainable, the Richmonds are doing their best to dairy in harmony with nature.

“I am all about staying in the black this year and studying what is most cost-effective,” Richmond said.

The Richmonds milk a wide variety of crossbred cattle, crossing dairy breeds with dual-purpose animals to improve muscling, udder height and attachment, and carcass value at the end of the cow’s productive life. For example, they cross Holsteins with Montbéliarde, Normande, and Fleckvieh.

Brittany Olson is a freelance writer, dairy farmer, and photographer and vice president for operations for Berglane Farm.

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Competency-Based Occupational Frameworks: A Tool for Modernizing Apprenticeship

Diana Elliott

As the United States seeks to expand apprenticeships to new fields and sectors and to increase the number of apprentices nationwide, there is an increasing need to provide resources that facilitate the process and meet employers' needs. Competency-Based Occupational Frameworks (CBOFs) provide high-quality and nonproprietary standards to employers, intermediaries, government agencies, trainers, curriculum developers, and others seeking to develop and refine apprenticeship programs.

CBOFs emphasize whether an apprentice can demonstrate competency in various core functions of an occupation. This stands in contrast to time-based apprenticeships and their related resources, which monitor successful completion through the amount of time an apprentice spends on various tasks. CBOFs are also designed to reduce barriers to entry for new apprenticeship sponsors, promote program consistency and quality, and expand registered apprenticeships to additional occupations.

This chapter describes occupational standards in the US context, how competency-based apprenticeships offer advantages, and what CBOFs are and how they can facilitate the expansion of apprenticeship.

Occupational Standards and the US Context for Apprenticeship

At the core of CBOFs are occupational standards. Occupational standards describe the job functions a person must competently execute to meet the requirements of a given occupation, as well as the knowledge and skills they need to perform effectively. Occupational standards are typically adopted by entire countries, industries, or organizations after review, comment, and approval by a representative body authorized to do so. Canada, Germany, Switzerland, and the United Kingdom have assembled expert bodies of employers and skilled workers to develop consensus-based nationally recognized occupational standards that unify the pathway to job training.

The US has not adopted national occupational standards. The absence of standards has led to an apprenticeship system that offers flexibility but lacks a consistent format and offers limited detail about how programs work and what apprentices will learn. This lack of detail also makes it difficult for apprentices, employers, and government officials to distinguish between high-quality programs and

those that fall short. It also makes it challenging to evaluate or compare apprenticeship programs and contributes to a long development and approval process for new programs. The lack of standards may have also impeded the growth of apprenticeship in the US and has likely led to a fragmented system that can be difficult for new employers and would-be apprentices to navigate.

The US Department of Labor contracted with the Urban Institute to create standards for competency-based apprenticeships to address some of these shortcomings. CBOFs were created to have national recognition, to be high quality, and to facilitate the start of new apprenticeships. They emerged because of the absence of national standards but are flexible enough to work in the US system. Because Urban is a nonpartisan research organization, the standards are created based on existing industry and occupational information and are intended to be used by any interested sponsor. Large employers, small employers, for-profits, nonprofits, and associated intermediaries and credentialing organizations can use the same occupational standards to start or revamp apprenticeship programs.

What Is a Competency-Based Apprenticeship, and What Are Its Advantages?

Competency-based apprenticeships constitute the real-world demonstration of knowledge, skills, and abilities at the workplace and on the job. Though learning can happen both in the classroom and at the workplace, what is important in a competency-based apprenticeship is that the apprentice can demonstrate competencies. Rather than simply knowing and reciting facts learned from a training curriculum or course, an apprentice must demonstrate successfully *doing* the job.

Apprenticeships have always incorporated on-the-job learning, but competency-based apprenticeships are different in that the criteria for being deemed successful in the apprenticeship emphasize job performance rather than the number of hours spent on particular tasks. This is a departure from how most US apprenticeships are structured. Time-based and some hybrid-based apprenticeships prioritize memorized facts or the number of hours an apprentice devotes to a task rather than the successful demonstration of on-the-job performance.

But not all competency-based programs are created equal. Many programs labeled as “competency based” are self-paced learning programs that do not measure work-related competencies. In self-paced learning, students move through topics at their own pace and typically pass tests designed to measure their knowledge of content about predetermined learning objectives. Few employers would pay an employee to recite facts or demonstrate a skill simply for the sake of doing so. Instead, workers demonstrate their abilities to recall and ply knowledge and skills by executing tasks. This is what competency-based apprenticeships deliver.

Consequently, true competency-based apprenticeships (i.e., programs that evaluate the successful on-the-job demonstration of job functions) better meet employers’ expectations for job performance. When an apprentice can competently complete various job functions, the employer knows the apprentice is performing at a proficient level. Competency-based apprenticeships are also consistent

with the ways many workplaces evaluate the performance of all employees, whether they are apprentices or not. As workplaces move toward competency-based performance evaluations for all employees, the process for assessing an apprentice becomes no different than that for any other employee.

Furthermore, with competency-based apprenticeships, the pace can be tailored to the needs of both apprentice and employer. Consider an apprentice who is a software developer. Perhaps this apprentice starts his or her program already having learned considerable coding skills, knowing several languages, and exhibiting proficiency in several technical job functions associated with the occupation. But to be a successful software developer, an apprentice must also communicate and work well with others. Let us say this apprentice lacks experience working on a team to create a product and needs help developing communication and teamwork skills. This apprentice may require less time to complete the technical aspects of the apprenticeship and more time to develop professional communication skills. A competency-based apprenticeship allows both the employer and employee to adapt the pace and order through which on-the-job tasks are completed and assessed for competency.

Competency-based apprenticeships have many advantages for both employers and employees that make them ideal for the modern system. For the apprentice, a competency-based program is an opportunity to demonstrate—and be acknowledged for—competency in certain job functions, even if that competency was developed through previous work or educational experiences. Employers benefit from competency-based programs because they know that apprentices have not only memorized facts or mastered discrete skills but can apply the knowledge and skills to perform a job in the manner and at the speed and level of accuracy required. Workers become productive faster, returns on training investments are realized sooner, and employers have a better sense of an apprentice's strengths and abilities before placing one in a permanent position. As the US seeks to expand apprenticeships, making the case to employers that apprenticeships can be an expedient and high-quality way to address their labor force needs is made easier through competency-based apprenticeships.

The Path Forward: Competency-Based Occupational Frameworks

The creation of CBOFs is a path forward for the US registered apprenticeship program. The US is unlikely to move toward national occupational standards as other countries have. Yet, there is a need for more consistency and quality across apprenticeship programs to ensure that employers are hiring people who can fully execute the work on the job and that employees are getting the high-quality on-the-job training and related technical instruction they need to fill those roles. By achieving better results for employers and employees, competency-based apprenticeships will expand in take-up nationwide.

To support the expansion of registered apprenticeships in the US, the Department of Labor has contracted with Urban to develop CBOFs that are industry-driven and consensus-based, nonproprietary, and high-quality documents, tools upon which apprenticeship programs can be built. The Urban team works with various industry representatives, expert workers, trade and labor organizations, certifying bodies, and educators to develop the documents. Although no employer or apprenticeship sponsor is required to use the frameworks, those that do may find it easier and quicker to design their program and gain federal or state approval of their work process schedules.

As of August 2019, 21 CBOFs have been approved and released by the Department of Labor. They span numerous industries, including advanced manufacturing, energy, health care, information technology, and transportation.¹ Many more are planned for additional occupations and industries. The project aims to have more than 50 documents available as resources for all to use.

How CBOFs Are Created

Creating a CBOF is a multistep process from inception to completion. The process typically begins with expressed interest from an outside party seeking to launch a competency-based apprenticeship for a particular occupation. Typically, the related documentation to start this apprenticeship—a work process schedule—does not yet exist. Sometimes this is because the occupation is new. This may especially be the case in quickly evolving industries such as advanced manufacturing and information technology, where new occupations are being created to meet new technological and workforce demand. In other cases, an occupation is experiencing rapid growth or a shortage of workers that necessitates introducing apprenticeship. In yet other cases, a time-based program may already exist, but there is interest in starting a competency-based one. Industry needs and partnerships typically drive the creation of CBOFs.

Upon identifying a new occupation in need of a CBOF, Urban researchers draw from as many resources as can be identified. This typically includes O*NET,² apprenticeship work process schedules, international apprenticeship standards, occupational overviews prepared by trade and labor organizations, and exam content and standards for third-party certifications. On occasion, other materials, such as blogs or videos produced by workers in those occupations, have been used to identify the job functions and competencies that characterize their work. Urban researchers then use these resources to compile a first draft of the CBOF, which contains an occupational overview section, a work process schedule, and a detailed job functions section.

The **occupational overview** section is written to identify the job description, attitudes and behaviors of workers in that position, similar job titles, and other information, such as the potential career progression and credentials someone in this position might need. As the following screenshot of the first page of the occupational overview section of the medical assistant CBOF shows, this overview

presents a description of the occupation in a general-enough way that a potential apprentice or aspiring sponsor could understand whether it fits his or her interests (figure 1).

FIGURE 1

**Example of the Occupational Overview Section
from the Medical Assistant Competency-Based Occupational Framework**

Occupational Purpose and Context

Medical Assistants work in medical offices and outpatient care centers, including urgent care centers and surgical centers. They work with a range of licensed health care and allied health care providers, including doctors, optometrists, podiatrists, chiropractors, nurse practitioners, physician's assistants, nurses, radiology technicians, respiratory therapists and office support staff (such as clerical office staff). Medical assistants can work in small medical practices that employ only the physician and a single medical assistant, or they can work in larger medical practices and outpatient care centers (including those affiliated with hospitals).

Medical Assistants work with licensed medical care providers in medical offices or other outpatient centers to maintain office records and equipment, schedule and participate in the examination and treatment of patients, performing basic diagnostic tests or medical procedures as allowed by state and federal law, and providing patient education and follow-up support.

Potential Job Titles

Certified Medical Assistant, Chiropractor Assistant, Clinical Assistant, Doctor's Assistant, Medical Assistant, Medical Office Assistant, Ophthalmic Technician, Registered Medical Assistant

Attitudes and Behaviors

Medical assistants must be patient, caring, non-judgmental, empathetic individuals who can build trust and maintain confidentiality. They must pay attention to details and follow procedures with fidelity.

The **work process schedule** is the heart of the CBOF and provides the job functions and competencies an apprentice might be expected to complete. The work process schedule also exists as a separate asset for sponsors who wish to adopt it outright as the basis of their program. The work process schedule is the core document because it encompasses the overall training and learning plan that the Department of Labor or a state apprenticeship agency must approve as part of the overall registered apprenticeship application. For a competency-based program, the work process schedule

includes all the job functions and competencies an apprentice must demonstrate to complete the program. In a time-based apprenticeship program, the work process schedule states how many hours that apprentice will spend on the job, in each task, and in the classroom to complete the program. In a hybrid program, the employer may require the demonstration of competencies to complete some program elements, and the completion of a certain number of hours to meet other requirements.

Whether a sponsor uses the work process schedule to launch a program or not, the schedule can be a resource for those looking to create their own tailored version of the program. Below is a snapshot of the first page of the medical assistant CBOF that shows the structure and how job functions and competencies are typically written and displayed (figure 2). The language presents competencies in an action-oriented way (e.g., “schedules appointments,” “greet and logs in patients at office or clinic”). Because competencies are demonstrated on the job, they are written to show performed activities rather than recited knowledge or facts.

FIGURE 2

Example of the Work Process Schedule from the Medical Assistant Competency-Based Occupational Framework

WORK PROCESS SCHEDULE		ONET Code: 31.9092.00
Medical Assistant		RAPIDS Code: 1085
JOB TITLE:		
Company Contact: Name		
Address:	Phone	Email
Apprenticeship Type: <input type="checkbox"/> Competency-Based <input type="checkbox"/> Time-Based <input type="checkbox"/> Hybrid		Prerequisites
JOB FUNCTION 1: Communicates with others to collect, share, record and report information properly		
Competencies	Core or Optional	
Schedules appointments	Core	
Greets and logs in patients at office or clinic	Core	
Determines and records medical history and reason for current appointment/visit/procedure	Core	
Provides patient instructions, information and education	Core	
Phones, faxes or uses electronic system to order or refill prescriptions	Core	

Finally, the **detailed job functions** section provides the performance criteria anticipated for each competency outlined in the work process schedule and is designed to help the sponsor evaluate the ways an apprentice may be deemed competent. Sponsors can use the performance criteria as a checklist or assessment tool to determine if the apprentice is making progress. The language is written to convey active demonstration of criteria rather than the recitation of knowledge (figure 3).

FIGURE 3

Example of the Detailed Job Function Section from Medical Assistant Competency-Based Occupational Framework

Related Technical Instruction		
KNOWLEDGE	SKILLS	TOOLS & TECHNOLOGIES
<ul style="list-style-type: none"> • Basic understanding of medical symptoms and diagnoses • Medical terminology, anatomical terms, abbreviations and acronyms • Names of pharmaceuticals and terminology used to communicate dosage and strength of medication • Routine treatment regimes, diagnostic tests, medical procedures • HIPAA rules and regulations regarding patient privacy • Rules for working with minors; authorization of care, patient privacy, etc. 	<ul style="list-style-type: none"> • Scheduling • Speaking Clearly • Listening actively 	<ul style="list-style-type: none"> • Telephone systems (including computer-based systems), electronic mail, scheduling software • Electronic medical records

Competency A: Schedule appointments	Core or Optional
PERFORMANCE CRITERIA	
1. Answers phone or responds to email promptly	Core
2. Determines urgency of appointment based on office protocols	Core
3. Determines whether scope of practice is appropriate for patient (i.e. is a referral from a general practitioner needed)	Core
4. Schedules the patient following office policies and procedures regarding appointment time and duration based on the nature of the visit	Core
5. Provides patient with clear instructions regarding appointment date and time, office location and preparation required for medical appointment or procedure	Core
6. Provides accurate information about insurance plans accepted by care provider	Core

Once the draft CBOF is complete, the most important part of the process is the collaborative work with employers and experts to develop and vet the frameworks through consensus to ensure they meet current labor market expectations. By creating documents that satisfy many employers’ needs, the CBOFs document occupational standards. Thus, the CBOFs address shortcomings in the current system. They provide high-quality and consensus-based documents for many occupations—created in

collaboration with national experts—that sponsors can use to create their own programs. Upon working the final industry and expert input into the documents, Urban then submits the CBOFs to the Department of Labor for final approval and release.

Key Takeaways for Creating CBOFs

As the Urban team has developed proficiency creating CBOFs, we have learned a great deal about the process. There are various key takeaways for how to create CBOFs—related to drafting them and facilitating the process—that others may find beneficial. The following themes from our work will help those seeking to create their own CBOFs.

Transforming time-based apprenticeship materials to competency-based ones. Increasingly, the Urban team is asked to reframe time-based apprenticeship materials to make competency-based ones. This reflects a growing interest among employers, intermediaries, and others to shift toward competency-based apprenticeships.

Often, the work process schedules registered with the Department of Labor—many of the source documents the Urban team uses—are time-based documents. In time-based work process schedules, the descriptions of tasks and requisite knowledge are often written as learning objectives, rather than competencies, and may lack detail. Learning objectives have to be transformed into elements that characterize an apprentice’s on-the-job performance through the major job functions, competencies, and detailed performance criteria for each occupation.

Learning objectives begin with such words as “explain,” “demonstrate,” “describe,” or “understand.” These words show that learning was attained but do not show that such knowledge can also be competently applied on the job. In contrast, competency statements often include an action verb, a noun, and a descriptor to describe a task someone might be paid to do on the job, such as “communicates clearly and appropriately with patients and colleagues.” These statements require the application of knowledge and skills as well as self- and occupational awareness.

Although time-based apprenticeships have associated hours for the anticipated completion of each major task area, the breakdown of hours is not necessary for a competency-based apprenticeship. But the allocation of hours in a time-based apprenticeship document may be helpful to understand how important each task is for completing a competency-based apprenticeship (e.g., apprentices with more hours may have more related competencies). A 2,000-to-3,000-hour program would include 7 to 12 job functions, 5 to 8 competencies per job function, and 4 to 6 performance objectives per competency.

An important component of setting up a registered apprenticeship program—regardless of whether the format is time based or competency based—is determining how the sponsor will help apprentices develop competency in the occupation and whether that will be achieved through on-the-job training or through related technical instruction, or RTI (i.e., curriculum- and classroom-based learning). Because

the way a sponsor delivers RTI can vary—with some sponsors relying on partnerships with career and community colleges, others relying on trade associations, and others developing in-house education programs—the CBOFs do not specify how RTI must be delivered. Instead, the CBOFs provide high-level recommendations regarding the knowledge, skills, tools, and technologies that would likely be taught during the recommended 144 (or more) hours of RTI. The sponsor determines how that RTI will be delivered.

Creating a new competency-based work process schedule. Often, a new apprenticeship and related materials (e.g., work process schedules) are needed to launch a program. Rather than converting a time-based apprenticeship to a competency-based one, creating a new program often requires evaluating the occupation and identifying its key components.

Namely, the first task (after identifying as much background information and source material as possible) is to identify the major job functions associated with the occupation. Generally, an occupation will have 5 to 12 job functions. Straightforward occupations have fewer job functions, while highly technical occupations using sophisticated equipment or mechanical systems often have more. In addition to having more job functions, technical occupations also often include more competencies and performance objectives.

To identify major job functions and competencies, it is important to use curricula, job postings, and descriptions of occupations from other countries with standards (e.g., the UK or Australia) to identify major job functions and the competencies within them. At this point, working with an expert on this occupation (e.g., an instructor, a supervisor, or a longtime practitioner) may be important for identifying the occupation's major elements. Engaging experts at the start and throughout the process is critical for ensuring a well-informed document. Furthermore, engaging experts from different employers and in different parts of the country ensures that multiple perspectives are represented and that sponsors with diverse needs and backgrounds will find the document useful.

Some documents have job functions that are too detailed and competencies that read as though they are assessment criteria. An important rule of thumb is to remember that job functions are the major elements of an occupation, competencies are what needs to be demonstrated effectively on the job, and detailed performance criteria are even more precise and could be used as a checklist to identify that each element of the competency (and job function) were performed to the employer's expectations.

Conclusion

Competency-based apprenticeships offer numerous advantages for US efforts to expand the apprenticeship model. Competency-based apprenticeships provide what employers are seeking (i.e., high-quality programs that allow them to fill openings and build their workforce from within) in a way consistent with best practices in training and assessment at many workplaces. The programs also

engage apprentices who already have skills so they can more quickly move toward activities that are interesting, challenging, and productive.

Until recently, few resources have been available to help employers and sponsors establish high-quality competency-based apprenticeships in an expedient way. Many employers and sponsors have found CBOFs useful as they create competency-based programs or use the documents to launch a program. As additional CBOFs are created, a growing set of well-researched, industry-driven, and expert-vetted standards will help competency-based apprenticeships increase in the US and will help instill quality throughout the system to benefit both employers and apprentices.

Notes

- ¹ For a complete list and available documentation, see “Competency-Based Occupational Frameworks for Registered Apprenticeships,” Urban Institute, accessed August 5, 2019, <https://www.urban.org/policy-centers/center-labor-human-services-and-population/projects/competency-based-occupational-frameworks-registered-apprenticeships>.
- ² See O*NET for examples of occupational documentation: <https://www.onetonline.org/>.

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State Efforts Supporting Apprenticeship Expansion

Gina Wells, Jennifer Jirous-Rapp, and Brad Roller

States play a critical role in the expansion of apprenticeship in the United States, and recent federal investments have increased their capacity to do this work. States are putting their energy and resources into range of activities to expand apprenticeship that include building partnerships, developing programs in new industries and occupations, creating a diverse pipeline of apprentices, and building connections to the K–12 and higher education system. Each of these activities is an important part of scaling up and sustaining apprenticeship. But to create significant growth in the number of apprenticeship programs and the number of apprentices, states must both encourage business demand for apprenticeship and increase capacity to develop and approve apprenticeship programs. This chapter shows how states are building awareness, marketing apprenticeship, and streamlining development and approval processes to increase business adoption of apprenticeship programs.

Changes in Federal, State, and Private Investment in Apprenticeship from 2015 to 2019

The private sector still contributes most of the resources for operating apprenticeship programs, but federal and state governments and philanthropic sources are increasing their investments in apprenticeship activities. These investments help states to direct significant funds toward apprenticeship expansion efforts. The choices states make and activities they emphasize will have a significant impact on the direction of apprenticeship expansion in the United States.

Federal Investments

Before 2015, federal funding for apprenticeship was mostly limited to providing oversight through the US Department of Labor’s Office of Apprenticeship and a \$1 million annual appropriation for the Women in Apprenticeship and Nontraditional Occupations Act (Collins 2016). But between 2015 and 2019, the federal government increased its investments in apprenticeship activities. In 2015, the Department of Labor began using funds from H-1B visa fees to support apprenticeship. For fiscal year 2016, Congress approved the first dedicated federal funding for apprenticeship with a \$90 million appropriation. Federal investments continued to grow, with congressional appropriations amounting to \$95 million in fiscal year 2017, \$145 million in fiscal year 2018, and \$160 million in fiscal year 2019 (Koller 2018).

A significant portion of this funding has been awarded as grant investments directed entirely or partially to states. Below is a table summarizing the grants awarded by the Department of Labor from 2015 to 2019 that support state apprenticeship expansion activities.

TABLE 1

US Department of Labor Grants That Support State Apprenticeship Expansion, 2015–19

Grant name and purpose	Year	Amount	States funded
American Apprenticeship Initiative. These grants fund partnerships between employers, organized labor, nonprofits, local governments, and educational institutions to expand registered apprenticeship to new communities and new industries.	2015	\$175 million (\$37.8 million directly to states)	9 states ^a (46 grantees)
Apprenticeship Accelerator Grants. These grants allow states to develop a strategic plan and build partnerships for apprenticeship expansion and diversification with state education, workforce, and economic development systems.	2015	\$10.4 million	50 states and the District of Columbia
State Apprenticeship Expansion Grants. These grants support integrated, statewide apprenticeship strategies and state capacity to engage industry and meet the demand for new programs in both traditional and nontraditional industries and catalyze state innovations to increase apprenticeship opportunities for low-income and underrepresented populations.	2016 and 2018	\$100.5 million	37 states ^b
Apprenticeship State Expansion Grants. ^c These grants expand the number of apprentices in registered apprenticeships nationwide; encourage apprenticeship diversification, including increasing the diversity of apprentices and growing apprenticeship across industry sectors; and support the integration of registered apprenticeship into state workforce development, education, and economic development strategies and programs.	2019	\$73 million	57 states, territories, and outlying areas

^aFunded states were Alaska, Arkansas, Connecticut, Georgia, Hawaii, Nevada, South Carolina, Washington, and Wisconsin.

^bFunded states were Alaska, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Michigan, Minnesota, Missouri, Mississippi, Montana, North Carolina, New Hampshire, New Mexico, Nevada, New York, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Vermont, Washington, and Wisconsin.

^cSee the funding announcement at Molly E. Conway, acting assistant secretary of the Employment and Training Administration, “Advisory: Training and Employment Guidance Letter No. 17-18,” letter to state governors, workforce agencies and administrators, apprenticeship agencies, directors of offices of apprenticeship, workforce liaisons, and education agencies, and state and local workforce board chairs and directors, May 3, 2019, https://wdr.doleta.gov/directives/attach/TEGL/TEGL_17-18_acc.pdf.

The Department of Labor’s Employment and Training Administration has invested additional funds through contracts, cooperative agreements, and grants to support nationwide expansion activities, such as technology modernization, **improved marketing, public awareness campaigns, business outreach,** sector-specific technical assistance, program development, strategic research, business engagement.¹

In addition to direct appropriations for apprenticeship initiatives, changes in federal policy and legislation have made more funding sources available to support apprenticeship—such as the

Workforce Innovation and Opportunity Act (WIOA), the Trade Adjustment Act, and the Perkins Vocational and Technical Education Act—and to expand apprentice access to US Department of Education financial aid resources. WIOA emphasizes apprenticeship as an important component of programs that the workforce development system should leverage to serve job seekers and employers. Local workforce development boards use WIOA Title I funds to help offset costs related to apprentice technical training and wages, help recruit and screen apprenticeship candidates, and supplement apprentice supportive services.² Trade Adjustment Act funding, which supports workers affected by trade-related circumstances, reimburses employer costs for related technical training, including a share of apprentice wages and supplies such as books, equipment, and transportation. Changes to the Perkins Act beginning in August 2019 will empower states and local partners to better align Perkins-funded programs with state, regional, and local economic needs through work-based learning opportunities such as preapprenticeships and apprenticeships. In addition, the Perkins Act will allow local funds to be used for transportation and fees for special populations to participate in a preapprenticeship, youth apprenticeship, or registered apprenticeship.³ Adult apprentices have also been able to receive federal financial aid for programs connected to a postsecondary institution's program of study through the Federal Pell Grant Program. On average, apprentices are eligible for \$3,000 in Pell grants, and schools can provide \$2,000 in federal work-study grants per apprentice. In addition, veterans can apply their GI Bill benefits to apprenticeship programs through the Montgomery and Post-9/11 GI Bills. Payments from the US Department of Veterans Affairs for this training are sent directly to veterans and supplement the lower wages trainees earn while learning a trade or skill (ETA, n.d.).

Philanthropic Investments

Philanthropic investment in apprenticeship expansion has grown alongside this federal investment, with a focus on contributing to thought leadership, convening leaders and practitioners, investing in youth apprenticeship, and supporting activities in specific states and regions. Philanthropic contributions have come from such entities as The Annie E. Casey Foundation, The Joyce Foundation, JPMorgan Chase & Co., the Siemens Foundation, the Ballmer Group, Bloomberg Philanthropies, Salesforce.org, The Chicago Community Trust, the Pritzker Traubert Foundation, and the MacArthur Foundation. These investments have led to such work as the national Apprenticeship Forward conference in 2017; technical assistance for community college program sponsors; program expansion in Washington State (Career Connect Washington 2019); Apprenticeship 2020;⁴ and the formation of the Partnership to Advance Youth Apprenticeship, which recently awarded nine grants (three of which went to states—North Carolina, Montana, and Texas) to launch, expand, and improve apprenticeship opportunities for high school-age youth.⁵

State Investments

States have also increased their investment in apprenticeship. State investments range from directly supporting apprentices and employers through tax credits and tuition support, to systemic enhancements that support state government entities responsible for expanding and supporting apprenticeship programs. From 2016 to 2018, 30 states passed 60 new apprenticeship laws, focused on authorizing new funds for apprenticeship programs, including appropriated funds and tax credits; establishing new apprenticeship programs or creating new requirements for existing programs; increasing awareness of apprenticeship programs; ensuring that apprentices can earn college credit; and preventing discrimination and ensuring diversity among apprentices and apprenticeship programs (National Conference of State Legislatures 2018).

States Are a Critical Driver of Apprenticeship Expansion

State governments play a critical role in the apprenticeship system. In 25 states, the US Department of Labor has recognized the state's apprenticeship agency and given it authority to approve and register programs. These states also operate state apprenticeship councils. In all 50 states and US territories and outlying areas, the critical role states play in economic and workforce development activities and setting and implementing education policy make them essential players in US apprenticeship expansion efforts.

States have put their energy and resources into activities intended to increase the use of apprenticeship as a work-based learning strategy. Our work supporting state apprenticeship expansion has allowed us to observe a wide range of activities contributing directly to expansion. These activities fall into five categories.

- **Providing state leadership and policy.** Many governors have made apprenticeship a significant part of their economic and workforce development platforms. They are using their communication power to focus attention on the approach, developing policies that expand apprenticeship, and aligning organizational structures to promote expansion. Legislatures are exploring policy frameworks for expansion, putting resources and structures in place, and directing state funds to establish new and expand existing programs.
- **Strengthening business outreach and engagement.** States are building their capacity to communicate with businesses about apprenticeship to increase awareness of the apprenticeship model and increase business demand for apprenticeship programs.
- **Increasing capacity to launch, develop, and manage programs.** To complement increased business demand for apprenticeships, states are increasing their capacity to develop and support programs.
- **Building a pipeline of apprentices and increasing diversity.** As apprenticeship opportunities grow, states are working to ensure that all workers and job seekers have access to these

opportunities and that businesses have a pipeline of talent. Their approaches include improving communication with families, youth, and job seekers about the value of apprenticeship opportunities; providing access to information; strengthening partnerships with the American Job Center system; increasing access to quality preapprenticeship programs; and partnering with trusted organizations to reach underrepresented populations.

- **Aligning with career pathways and postsecondary education.** To support long-term sustainability, states are creating links to secondary and postsecondary education programs and integrating apprenticeship into broader career pathways. Expanding youth apprenticeship and preapprenticeship offerings, integrating apprenticeship into career and technical education, and pursuing policy changes that allow apprenticeships to connect seamlessly with postsecondary education pathways help embed apprenticeship as a trusted education and training model.

Much has been written about what it will take to expand US apprenticeships, and a consistent theme is that we must increase capacity to market and develop apprenticeships. State are playing an increasingly large role in this work, and the Department of Labor's 2019 award of apprenticeship state expansion grants to 57 states and territories ensures that all states have funds to support these activities. The remainder of this chapter focuses on state efforts to build awareness, market apprenticeship, and streamline program development and approval processes.

State Strategies to Build Awareness and Increase Business Demand for Apprenticeship

Increasing business demand for apprenticeship is a critical component of expansion efforts. The literature suggests that what determines business participation is whether they are aware of the model, see it as an effective tool to meet their workforce needs, and believe the cost-benefit calculation turns out in their favor (Lerman 2014; Wilson and Mehta 2017). States are increasing their awareness-building activities and implementing policies and practices that increase business demand for apprenticeship.

Building Business Awareness of the Apprenticeship Model

Many states have increased their outreach and communication to businesses about apprenticeship opportunities. These activities range from supporting statewide public awareness campaigns to increasing staffing levels and coordinating employer engagement meetings.

The Minnesota Department of Labor and Industry contracted with a communications and marketing firm to develop a communication plan for the state. In 2017, the firm interviewed current sponsors, conducted focus groups of prospective sponsors and apprentices, and surveyed prospective

apprentices (targeting youth, women, veterans, and people of color) to gain insights into apprenticeship awareness and perception. As part of this work, staff interviewed sponsors from the construction, manufacturing, health care, and utilities sectors to learn more about their recruitment needs, perceived industry stigmas, apprentice training, effective awareness materials, and preferred recruitment tools. Staff also held a prospective sponsor focus group of employers in manufacturing, health care, or information technology industries to learn about their hiring goals within the next year and their ability to offer on-the-job training or mentorship. Information gathered from employers informed the state's Apprenticeship Minnesota website.⁶

Colorado's Apprenticeship Evolution campaign uses media outlets to modernize perceptions about apprenticeships. Key components include a new website,⁷ 15- and 30-second videos that challenge perceptions and spark interest, and a digital advertising campaign on Facebook, Twitter, YouTube, Hulu, and MLB.com that netted almost 3 million views in the first three months. The videos were also used in radio and television public service announcements. The state has print and presentation materials for modern and consistent messaging and is recruiting business leaders who use apprenticeship to educate other business leaders.

The Arkansas Department of Workforce Services—in partnership with local chambers of commerce, economic development agencies, and workforce development agencies—sponsors forums on apprenticeship to help employers address the skills gap. Since November 2018, these Employers Growing Talent through Apprenticeships events have attracted more than 200 employers and other interested parties. The events include a panel of employers who have experience implementing and administering registered apprenticeship programs. Recent surveys conducted at the events indicate that attendees have less-than-average knowledge of apprenticeship as a workforce development option. These events allow the business community to hear from other business leaders and connect with Arkansas Department of Workforce Services staff who can educate and support them in developing programs.

Creating Coordinated and Skilled Business Engagement Teams

Increased business awareness of the benefits and availability of apprenticeship must be met with a network of people who have the expertise to engage with employers, answer their questions, and support them in developing programs. As South Carolina demonstrated in 2012, even a small team can respond effectively to a significant volume of business interest. With six dedicated employees, Apprenticeship Carolina increased the number of companies in South Carolina that hire apprentices from 90 in 2007 to 603 in 2012 (Steinberg, Gurwitz, and Schwartz 2014).

State approaches to building these teams reflect their unique cultures and workforce development, education, and economic development structures. Some states hire dedicated staff within the state apprenticeship agency, while others create networks of people from state agencies, college systems,

workforce development organizations, and other partners. States that have high-functioning business engagement networks make use of existing employer relationships, coordinate targeted outreach to the business community to avoid duplicative contact, and invest in training and other activities to ensure key staff members and partners have the skills to engage businesses.

Idaho's business outreach team consists of a regional business specialist from the American Job Center, a half-time apprenticeship training coordinator from a technical school or community college from each of the state's six regions, and representatives from four intermediaries with connections to the information technology, manufacturing, and health care sectors who also have strong ties to the K-12 education system. This team conducts outreach and education about apprenticeship within their communities and uses their understanding of apprenticeship and a consultative, business-driven model to create customized apprenticeship solutions for businesses.

Michigan funded apprenticeship success coordinators in each of the state's 16 workforce areas. Trained by the Department of Labor Office of Apprenticeship state director and apprenticeship training representatives, the apprenticeship success coordinators help businesses, intermediaries, education and training providers, and other sponsors launch new apprenticeship programs. Strong communication between the Office of Apprenticeship, which handles program registration, and the apprenticeship success coordinators ensures consistency in services and increase the state's capacity for apprenticeship expansion.

Strengthening Return-on-Investment Calculations for Businesses

States are responding to business interest in the "investment value" of apprenticeship by creating return-on-investment tools and finding innovative ways to offset employer start-up and sustainability costs through policies that include tax credits and grants.

Oregon created its own apprenticeship return-on-investment calculator.⁸ The tool helps businesses explore the costs and benefits associated with registered apprenticeship and has a resources page that includes a glossary of terms, wage progression rates for common apprentice occupations, sample scenarios, and an explanation of the tool's assumptions and methodology.

To offset start-up and management costs, states use various policy and programmatic solutions. Many use tax credits to provide incentives for business participation. In 2017, Arkansas, Maryland, Montana, New York, and West Virginia enacted legislation creating or adjusting tax incentives for businesses that participate in apprenticeship programs, bringing the number of states offering such incentives to 14.⁹ The structure for these tax credits vary, but they are all designed to reimburse training costs or reduce businesses' tax liability.

Some states provide grants to support program development. These range from small grants that cover start-up costs to larger grants that cover classroom training, mentorship, and more.

South Dakota's StartToday apprenticeship program offers businesses up to \$30,000 to help offset start-up costs when developing a new preapprenticeship or registered apprenticeship program. Seventeen programs received funding for registered apprenticeship programs in fall 2018, and all 17 registered programs in April 2019.¹⁰

Pennsylvania offers program sponsors grants up to \$3,000 per apprentice for up to three years to cover expenses related to instruction that complements on-the-job learning.

The New Jersey Office of Apprenticeship provides comprehensive funding to sponsors. In 2019, the state awarded more than \$5 million in grants to apprenticeship sponsors through its Growing Apprenticeship in Nontraditional Sectors competitive grant.¹¹ The program encourages business participation in apprenticeship by providing a 50 percent wage reimbursement for the first six months of newly hired apprentices' employment to offset costs incurred for training the new apprentice and to provide employers incentives for hiring registered apprentices from preapprenticeship programs. Training costs include related classroom instruction costs, materials and supplies, and supervision by a journeyworker or mentor.

In addition to providing businesses incentives, other states use funding to reduce the costs of related technical instruction and on-the-job training (Prebil 2019). At least 13 states offer tuition support for registered apprentices.¹² Several states are increasing their use of WIOA and other funds to support classroom and on-the-job training.

Leveraging Partnerships

Some businesses, particularly small and midsize businesses and those in rural areas, perceive as prohibitive the complexity of registration and the costs—in time and resources—of developing, implementing, and running programs (Wilson and Mehta 2017). To address this concern, states are increasing the capacity of intermediary organizations to take on sponsorship functions, freeing businesses to focus on mentorship and on-the-job training.

Several states have increased their capacity for program development and expansion by investing in intermediary organizations to conduct outreach to employers, manage relationships with labor partners, coordinate regional stakeholders, provide technical assistance to design programs, and assume administrative tasks. Intermediaries include state programs, nonprofits, and joint labor-management programs.

The Louisiana Workforce Commission partnered with intermediaries in the in-demand maritime, energy, information technology, and health care sectors. These partnerships have produced many benefits, including scalability, connections to large and cutting-edge companies, and sector expertise that ensures high-quality programs and opportunities for workers in Louisiana. For example, the Louisiana Workforce Commission worked with Maritime Services Group, a private, coast guard-

approved maritime training provider, to provide a single coherent training program that meets industry needs. The group's three-year able seaman apprenticeship program began in October 2018 and is projected to grow to 15 to 20 employers hiring 100 to 300 apprentices each year.

Alaska created a robust partnership with the Alaska Primary Care Association (APCA) to open apprenticeship opportunities in health care occupations. APCA is a private, nonprofit training and technical assistance organization of Alaskan primary care providers. Collaborating with this large and established network of health care employers created economies of scale that would be impossible to replicate without the partnership. To ensure participants succeed, the program has also implemented a distance mentoring component, along with a modified curriculum for apprentices who do not have internet access. APCA's staff members, including an apprenticeship coordinator and statewide mentor, provide one-on-one support to supplement distance delivery of curriculum.

States are helping workforce investment boards, community colleges, and others become apprenticeship sponsors. Ohio used federal funds to create the College Apprenticeship Consortium project, which helps state colleges playing the role of apprenticeship sponsors in the advanced manufacturing and health care sectors. In Nevada, Truckee Meadows Community College leads the state's Apprenticeship Project, serving as the sponsor for programs in advanced manufacturing, health care, and hospitality. And in Massachusetts and Michigan, local workforce development boards sponsor apprenticeships in health care, advanced manufacturing, and more.

State Efforts to Improve Program Development Processes

A critical complementary effort to increasing awareness of and demand for apprenticeship from the business sector is streamlining program development and approval. A significant increase in US apprenticeships requires the development and maintenance of new programs at a rate above the current workload levels of states and the federal government. States recognize this challenge and are working to increase capacity and maximize the efficiency of their program development processes.

Building Staff and Organizational Capacity for Program Development

By developing the skills of current staff members, hiring and training new staff members, and reimagining roles and responsibilities for stakeholders, states are creating networks of skilled people and organizations that can work with businesses, sponsors, education providers, and other partners to support program development.

Montana expanded its apprenticeship staff by recruiting and hiring from job service staff in offices across the state. The state now has apprenticeship team staff with a deep understanding of workforce

development, connections with community colleges and other partner programs, and trusted relationships with the local business community. These added capabilities have contributed to an increase in apprenticeship programs across the state.

Maryland used federal grant funds to add six new staff members to the state's apprenticeship training program. With the addition of state business service staff funded through the Wagner-Peyser program and a half-time position funded through the Senior Community Service Employment Program, the apprenticeship training program has increased business engagement across industry sectors and coordination across partner programs. To integrate apprenticeship even deeper into the workforce system, business service representatives from partner programs are also trained on apprenticeship and how to do a warm handoff to apprenticeship program staff. These partner programs include the Jobs for Veterans State Grant Program, Rapid Response, the Workforce Innovation and Opportunity Act, Vocational Rehabilitation, Temporary Assistance for Needy Families, and community colleges, and they promote apprenticeship as part of service delivery.

Streamlining Program Approval

States are increasing their capacity to create new apprenticeships by breaking down and simplifying their program approval processes. Shortening approval timelines improves customer service to apprenticeship sponsors and increases the state's approval capacity.

Montana apprenticeship staff developed a manual to clarify program approval procedures and created a common resource drive to store information and prevent duplication of work being done with employers. The process includes more employer engagement activities that increase employer awareness of apprenticeship and enable staff to create customized solutions. The state reports that employers commit to programs faster, and many new apprenticeship programs are hybrid or competency based.

The Florida state apprenticeship agency has streamlined its program registration process. Using a Kaizen quality improvement process, the Florida apprenticeship state director worked with field staff to modernize communication and streamline documentation and review processes, reducing the time to register an apprenticeship program to less than two weeks. The state had been averaging 7 new programs a year. After streamlining the process, it registered more than 20 programs in 2018 and expects to register up to 40 in 2019.

Massachusetts created online program registration guides that outline the steps businesses need to follow to register a program and provide all the documents businesses need.¹³ The guides include links to registered programs so businesses can easily find intermediaries that are registered sponsors in their sectors.

States with federally managed apprenticeship systems are strengthening collaboration between Office of Apprenticeship staff (state apprenticeship directors and apprenticeship training representatives) and state workforce staff to increase capacity for business outreach and program development. States have identified roles and responsibilities for federal and state staff and other apprenticeship partners, created new communication structures, and are providing training to articulate the work.

Iowa's apprenticeship lead worked with the Office of Apprenticeship state director to identify roles and responsibilities for workforce staff. Apprenticeship training representatives from the state apprenticeship office and business marketing specialists collaborated to streamline the process for business engagement. The state is leveraging marketing specialists and workforce advisers in American Job Centers to promote apprenticeships. Business marketing specialists use a referral form in conversations with employers that covers the apprenticeship standards requirements and allows specialists to document business and related training instruction needs. This form is sent to the Office of Apprenticeship for quality review and program registration.

Conclusion: Opportunities Ahead

As national momentum for apprenticeship expansion continues to grow, state-level policies, strategies, and actions will continue to influence the pace and scale of expansion. States are finding success by aligning policies, launching campaigns to build awareness and market apprenticeship, supporting business engagement, and streamlining the development and approval processes. It is important for states to have flexibility to design approaches that work best in their states, but there is a natural tension between state variation and the consistency that benefits businesses with multistate footprints. With respect to business outreach and capacity for program development, we see a few possibilities for increased national coordination.

As they continue this work, states will benefit from a national marketing and outreach effort that persuades policymakers and employers about the desirability and feasibility of apprenticeship. States can then align their own outreach, awareness, communications, and public engagement plans to counteract misperceptions about apprenticeship, encourage business engagement, and provide incentives for the use of apprenticeship intermediaries (e.g., colleges, workforce boards, industry associations, community-based organizations) who can work with employers and other stakeholders to expand apprenticeship.

Continued expansion will also require a national infrastructure that supports information sharing through peer learning and research. As states engage in promising practices such as those identified in this chapter, they need to be able to learn from each other and build on each other's success. With this sharing comes the need for a cohesive research plan that tracks progress, outcomes, impacts, and continuous improvement and makes results available to states to inform policy and practice.

Opportunities for national and regional convenings that enable peer-to-peer information sharing and collaborative problem solving will facilitate the spread of promising practices and help accelerate expansion efforts.

Notes

- ¹ For a more detailed description of these investments, see “Apprenticeship Grant Opportunities: Open Opportunities,” US Department of Labor, accessed September 17, 2019, <https://www.dol.gov/featured/apprenticeship/grants>.
- ² For more information, see Portia Wu, assistant secretary of the Employment and Training Administration, “Guidance on Registered Apprenticeship Provisions and Opportunities in the Workforce Innovation and Opportunity Act,” Training and Employment guidance letter 13-16 to state and local stakeholders and others, January 12, 2017, https://wdr.doleta.gov/directives/attach/TEGL/TEGL_13-16_acc.pdf.
- ³ See “Perkins V,” Perkins Collaborative Resource Network, accessed October 13, 2019, <https://cte.ed.gov/legislation/perkins-v>.
- ⁴ The Joyce Foundation, “The Joyce Foundation Awards \$17.5 Million in Grants,” press release, August 8, 2018, <http://www.joycefdn.org/news/the-joyce-foundation-awards-17-5-million-in-grants>.
- ⁵ New America, “Announcing the Partnership to Advance Youth Apprenticeship Grantees and PAYA Network,” press release, May 29, 2019, <https://www.newamerica.org/education-policy/press-releases/paya-grantee-announcement/>.
- ⁶ See the website for Apprenticeship Minnesota at <http://apprenticeshipmn.com>.
- ⁷ See the website for Colorado at <http://apprenticeshiprevolution.com>.
- ⁸ “ROI Calculator,” Oregon Apprenticeship, accessed September 17, 2019, <http://oregonapprenticeship.org/roi-calculator/>.
- ⁹ “Learn about Tax Credits,” US Department of Labor, Employment and Training Administration, last updated March 4, 2019, <https://doleta.gov/OA/taxcredits.cfm>.
- ¹⁰ “2018 Start Today SD Incentive,” South Dakota Department of Labor and Regulation, accessed September 17, 2019, <https://www.starttoday.sd.com/businesses/start-today-sd-incentive>.
- ¹¹ Office of New Jersey Governor Phil Murphy, “Governor Murphy Announces \$3 Million in GAINS Grants for Businesses, Agencies to Train New Apprentices,” news release, May 15, 2019, <https://www.nj.gov/governor/news/news/562019/approved/20190515b.shtml>.
- ¹² “Learn about Tax Credits,” US Department of Labor, Employment and Training Administration, last updated March 4, 2019, <https://doleta.gov/OA/taxcredits.cfm>.
- ¹³ “Information for Businesses Offering Apprenticeships,” Mass.gov., accessed September 17, 2019, <https://www.mass.gov/information-for-businesses-offering-apprenticeships>.

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Apprenticeships: A Beginning at Smokey Valley Farms

Brandi Meek



Apprentice Brandi Meek (center) instructs Ellie Clay (left) and registered apprenticeship coordinator Tracy Osborne Clay (right), atop her new best friend, Blue Smoke. Photo by Robert Coleman (president) and Max Hammond (vice president), Smokey Valley Farm.

Smokey Valley Horse Farm's First Registered Apprentice: Brandi Meek

As long as I can remember, I've been infatuated with the beauty and athleticism of the equine species. Growing up in eastern Kentucky, I remember the desire to get my hands on any book or magazine with a

picture of a horse on the cover and knowing every property in the surrounding counties that had a horse, pony, or mule.

My childhood bedroom was so wallpapered with posters and cutouts of horses of multiple breeds and disciplines, you could scarcely determine the color of the walls. I continually voiced my dream of owning a horse to both my parents, to which they replied, “If you can save your money up long enough to buy your own horse, we will supply the money for purchasing fencing material.” Looking back on it now, I realize my parents were likely holding on to the hope that I was just going through that “crazy horse girl” phase that many Kentucky preteens experience.

Fast-forward two years, at age 11, my parents and I were bringing home a scrawny pony that a friend had bought at an auction out of sympathy. With this little horse, I spent countless hours riding, not only around my house but on every trail I could bum a ride to and then to my first horse show at the Boyd County Fair. There, I met my second family, consisting of other horse-crazy kids. This led to my love for contest riding (barrel racing, pole bending, stake racing, and flag racing). 4-H provided many opportunities for me to expand my horse knowledge and experience. With the Boyd County 4-H saddle club, I traveled to horse training clinics as far away as Asheville, North Carolina, and Columbus, Ohio; competed in district- and state-level horses shows; and participated in horse bowl, hippology, horse judging competitions, and other well-known equine events such as the All American Quarter Horse Congress and Equine Affaire.

On one of these 4-H trips, I stopped at a booth advertising Morehead State University’s equine program. While I still was uncertain what field I wanted to be in, I knew I wanted to work in the horse industry, and a bachelor’s degree in equine science was a step in the right direction. I started college in fall 2010 and took every equine-related and riding class I could, and I still did as many trail rides and horse trips as my schedule would allow. My second summer in college, June 2012, I met Rebecca Adkins of Adkins Reining Horses at Joe Wolfe’s barn in Cannonsburg, Kentucky. I fell in love with the sport and learned so much in the summers, spring and winter breaks, and weekends I spent there. It was my experience starting colts and riding show-age reining horses that led me to think the training aspect of the equine world was where I wanted to be.

After graduating from Morehead State in fall 2014, I unwillingly started a “normal job” as an assistant manager for a local gas station. It took only a year for me to decide I’d had enough of an indoor office setting and was ready to get back to my passion. I started riding reining horses for a few local barns in summer 2016. But a cancer diagnosis delayed my new career path. Six months later, I was ready to give it another try and with the use of a few friends’ barns, I began taking in horses for a month at a time, either starting ones that had never been ridden or tuning up older trail horses. This lasted during the spring and summer but faded out when the cool weather moved in. Determined to make it work, I waited out the cold months and began riding at a barn in Cannonsburg in spring 2018. I ran into a friend who told me about Smokey Valley Farm and its owner, Bob Coleman. After a few phone calls, we arranged a visit. I was excited to shift my focus to the world of gaited horses.

I'm now closing in on my first year working at Smokey Valley Farm and could not have foreseen all the opportunities that would come my way through this registered apprenticeship, everything from the work processes required for the apprenticeship, to meeting people coming down to ride and visit the farm, to two trips to Florida and a chance to be involved in the Appalachian Horse Revival at Morehead State's farm this coming May. I'm excited to see what other doors will open after I complete the program and can add the first certified horse trainer in Kentucky to my résumé.

Smokey Valley Horse Farm

Smokey Valley Horse Farm is situated in the picturesque green hills of Olive Hill, Kentucky. The farm, under the guidance of Bob Coleman, has created its own breed of naturally gaited horses, the Smokey Valley Horse. Max Hammond, vice president of Smokey Valley, describes these equine athletes as "naturally gaited, all-around sporting horses of the finest kind." The horses are promoted nationally and internationally. For more than two centuries, eastern Kentucky has produced horses with a gentle gait, bred to work in challenging terrain.

Desiring to apprentice horse trainers for the growing business and to strengthen ties with Morehead State University's equine studies program, Smokey Valley sought the services of the Kentucky registered apprenticeship program. For a horse trainer apprentice, the overarching goal is to train horses to ride and to "acculturate" them to human voices and commands. Apprentices also work with riders to ensure they are at ease with the horses. In addition to these core processes, horse trainer apprentices observe horses to detect signs of illness and injury; treat minor injuries and ailments; train horses for show competition according to prescribed standards for gait, form, manners, and performance for horse show operating routines; and maintain and manage horse facilities. The time required to complete the horse trainer journeyworker certification is 2,000 hours.

Brandi Meek is an equestrian trainer employed by Smokey Valley Farm in Olive Hill, Kentucky. Certified as a journeyworker at the Appalachian Horse Revival on May 22, 2019, Meek also holds a BS in equine studies from Morehead State University. A native of eastern Kentucky, Meek aims to eventually establish her own horse training facility.

Conclusion

Our contributors hope this compilation provides insight into modern apprenticeship, a nascent talent development model with abundant variation.

For businesses, the apprenticeship model's versatility and customization are important components that make it work as a tool for building pipelines of talent for companies ranging from sole proprietors to large corporations.

For educational leaders and classroom teachers, apprenticeship opportunities bring renewed student interest in classroom studies as ah-ha moments emerge and as academics, applied and otherwise, are relevant.

For apprentices, as wage earners new to the world of work, there is newfound interest in how academic learning can bolster performance on the job, performance that may translate into improved salaries and lifestyles.

Work touches so many aspects of life. The same is true of apprenticeship. The more research we compiled for this collection, the broader the scope became. We had fun conceptualizing this work and engaging in rich conversations with many highly talented contributors. We deeply explored some aspects of modern apprenticeship and only touched on others, but our goal was to include most of the model's integral components. We hope we have done so with the offerings from our contributors.

Successful apprenticeship programs

- build high-caliber talent pools, which is good for business, good for states (it drives business investment), good for those seeking to enter or move up in the workforce, and good for parents and other caretakers who come to understand that apprenticeship offers a viable entrance into a meaningful, gainful career—one that frequently results in advanced learning and degrees;
- change the economic welfare of whole communities;
- open up occupations and related opportunities to people who otherwise would not have access; and
- offer alternatives to student debt and provide a highly marketable skill set (both technical and soft skills).

What are the challenges associated with modern apprenticeship?

- As is the case with anything new, starting or expanding an apprenticeship program may seem daunting. But in the case of registered apprenticeship, many states have well-developed resources and knowledgeable people available to help put these programs in place. Once established and embraced by the US workforce, we will realize a refined, easy-to-navigate structure and less real and perceived bureaucracy.

- It is always a challenge to identify forward thinkers, especially when the four-year degree focus has been the norm for decades. But employers, young adults, and educators are gradually embracing the value of work-based learning, which can come with or without a college degree, depending on learner and employer needs.
- There are many myths about apprenticeship, but perceptions are not reality. The truth is that modern apprenticeship graduates typically receive a starting wage higher than most young adults entering the workforce; modern apprenticeship offers access to a broad array of career pathways beyond traditional trades; modern apprenticeship program benefits more than justify their costs; modern apprenticeship teaches interpersonal skills along with technical skills; and modern apprenticeship is flexible, allowing for many career trajectories.

Challenges to convention are necessary for progress. Modern apprenticeship is reshaping talent development and spurring parents, employers, the workforce, educators, and policy to rethink decades-old career pathway norms.

Compilers and Editors

Ervin Dimeny, executive director and adviser to the Education and Workforce Cabinet and commissioner of the Labor Cabinet, worked with national and international experts to make the apprenticeship a successful workforce development model in Kentucky, across all sectors. A former apprentice himself, Dimeny is a graduate of the Brandeis School of Law at the University of Louisville.

Deborah Williamson began her career with the Kentucky Court of Justice, establishing herself as a dynamic court executive officer serving elected members of the judiciary statewide. She has spent most of her career helping courts and other state government agencies develop business and strategic plans, supporting programs for disenfranchised populations through federal and state grants, and developing innovative social programs, with an emphasis on programming for at-risk youth. She has devoted the past three years to developing Kentucky's registered apprenticeship program and securing federal funding for the same. In 2019, Williamson was recruited to the New Mexico Department of Workforce Solutions to oversee the labor relations division, which contains two bureaus devoted to civil rights violations. She holds a PhD in sociology from the University of Kentucky.

Lisa Yates is director of programs and partnerships for IWSI America. She has worked in the public, private, and nonprofit sectors in community and economic development in various capacities—from teaching financial literacy to underserved high schoolers across New York's five boroughs; to infusing economic vitality, social services, and affordable housing into Hollywood (California); to grantmaking to reduce barriers to employment for low income workers. Along the lines of her past work in building strong communities and economies, she has a significant interest in using modern apprenticeship to create a diversified and highly skilled talent pool across industries and to provide lucrative career pathways to all those with a desire and commitment to thrive in a particular field. Yates has MAs in urban planning, public policy, and public administration from the University of Illinois and Harvard University. She is also coauthor of *It's Time: Using Modern Apprenticeship to Reskill America*.

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