



**IWSI**america  
THE INSTITUTE FOR WORKPLACE SKILLS AND INNOVATION



# Bridging the Skills Gap

Turning Skills Challenges into Workforce Development Opportunities

September 27, 2023 | 9.00am - 3.30pm | The Meyer & Renee Luskin Conference Center | UCLA

IWSIAMERICA.ORG

## Welcome to Bridging the Skills Gap 2023

Along with the passionate team at IWSI America, we're thrilled to have you here. Let's start with the question that unites all of us today: Why? Why are we all gathered at this event? It's not just to discuss the future of apprenticeships, workforce development, or even diversity. It's bigger than that. It's about human potential—your potential, my potential, and the incredible, untapped potential that exists in so many communities around us.

The world has changed dramatically, and we're all feeling it. We have people without jobs and jobs without people, a paradox that challenges us to look beyond traditional pathways. The good news is, within this challenge lies an unparalleled opportunity—to rethink, to reimagine, and to reconstruct the ways we prepare people for meaningful careers.

We have a choice. We can see the landscape as a series of obstacles, or we can view it as a playground of opportunity. I know which perspective fuels my work every day, and I suspect you share this vision.

As you delve into today's agenda—ranging from post-pandemic insights to the revolutionary power of apprenticeships, mentoring, and sector-specific discussions—I invite you to embrace the conversations and connections that align with your 'why.' The purpose that gets you out of bed in the morning, that motivates you to challenge the status quo, that fuels your ambition to make a lasting impact.

So, go ahead, flip through this booklet. Not only will you find a detailed guide to today's journey, but you'll also encounter articles and papers we believe will elevate your thinking. These are carefully curated to inspire dialogue and ignite action long after this conference concludes.

And remember, if you have questions, need guidance, or simply want to join the conversation, the IWSI America team is here for you.

Welcome to a day of discovery and purpose. Welcome to Bridging the Skills Gap 2023 !

Nicholas Wyman  
CEO, IWSI America

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# **BRIDGING THE SKILLS GAP:** TURNING THE SKILLS CHALLENGE INTO WORKFORCE DEVELOPMENT OPPORTUNITIES

## **CONFERENCE AGENDA**

- 9:00      **Insights into the Post-Pandemic World**
- 10:00     **The Power of Apprenticeship**
- 10:30     Morning Break and Refreshments
- 10:50     **Mentoring Matters: Unlocking Individual and Organizational Potential**
- 11:20     **Sector-Specific Panel Discussion: Skills Gap in Healthcare, Renewable Energy, and Advanced Manufacturing**
- 12:00     Networking Lunch
- 1:00      **Blueprints for Success: How to Set Up an Effective Apprenticeship Program**
- 1:30      **A Panel Discussion on Apprenticeship Experience**
- 2:10      **Representing the Underrepresented - Strategies to include Diverse Populations in your Workforce**
- 2:40      Afternoon Break and Refreshments
- 3:00      **Creating a Win-Win Workplace**
- 3:30      Close

# TRAINING MORE CLEAN ENERGY WORKERS WITH APPRENTICESHIPS

**Jake Richardson,**  
Writer, Cleantechnica

The world will not have a clean energy transformation without more workers to install the tremendous amount of urgently needed solar power, wind power, geothermal, energy-efficiency upgrades, and grid enhancements. These individuals will function as a critical component during the essential movement as clean renewables replace fossil fuels. To that end in the United States, recently the U.S. Department of Labor Office of Apprenticeships selected the Interstate Renewable Energy Council (IREC) to develop and manage clean energy Registered Apprenticeships. The IREC will head up the Apprenticeships in Clean Energy Network to expand the American clean energy workforce.

Richard Lawrence, Program Director at IREC and Deborah Williamson, Vice President of the Institute for Workplace Skills & Innovation America, answered some questions for CleanTechnica.

## **What is the Apprenticeships in Clean Energy (ACE) Network?**

The Apprenticeship in Clean Energy (ACE) Network is a multi-stakeholder partnership led by the Interstate Renewable Energy Council (IREC) to expand Registered Apprenticeships (RA) in the clean energy industry under a contract with the U.S. Department of Labor. IREC and its partners are coordinating outreach, engagement, and consulting activities to support clean energy employers, educational institutions, workforce agencies, community based-organizations, and other stakeholders to expand RA across the clean energy industry nationally. The project has an overall goal of registering at least 2,500 new Apprentices over the next five years, with a primary focus on the solar and energy efficiency sectors. At least 50% of the apprentices recruited into these career pathways will be from disadvantaged populations including women, People of Color, and veterans.

## **How can apprenticeships be used to train individuals to work in the clean energy industry?**

Registered Apprenticeships are a powerful tool to nurture and sustain a steady stream of highly qualified and diverse talent ready to drive the transition to a clean energy future. RA programs combine paid on the job learning with related technical instruction that is aligned with industry standards for the knowledge, skills, and abilities needed to succeed in a particular occupation. Similar to college degree and certificate programs, Apprenticeships are comprehensive education pathways that prepare individuals for careers in a particular field of study. Apprentices are paid employees who receive mentorship and progressive wage increases as they complete coursework, attain more experience, and demonstrate increased competency. Registered apprenticeship programs have proven benefits to employers including a path to developing a skilled workforce, improved productivity, reduced turnover, customized training, and increased diversity.

## **Is there a typical apprenticeship length, and what does a clean energy apprenticeship look like in terms of pay or no pay, benefits or none, full-time or part-time, opportunity for converting to employment, or placement at a different organization, credentials earned, and so forth?**

Registered Apprenticeships must be at least one year in length to meet the requirements to be Registered; but, depending on the occupation, may be up to four or five years long. Apprenticeships in the construction trades, like Electrician, Plumber, and Carpenter are typically four years long, and most other programs take at least two years to complete. There are over 1,000 occupations that have been approved for RA, and the Department of Labor has guidelines for each one. Apprentices are employees, and the employer is responsible for providing on the job learning, supervision, and mentorship in a structured, formalized process throughout the entire duration of the Apprenticeship. Related instruction may be provided by the employer, a college, or other education provider. The pay varies based on the occupation and the Apprentices progression through the program. Typically Apprentices will earn 40-60% of what the employer pays a "journeyperson," or fully qualified person, at the start of the program, and will receive pre-defined wage increases that lead up to the journeyperson wage when they complete the program. Upon the completion of an RA program an individual earns a credential from the Department of Labor demonstrating that they have completed their Apprenticeship in the particular occupation studied. This is similar to a degree in that it demonstrates a comprehensive education in a particular field has been completed. Many RA programs also incorporate other industry-recognized credentials as part of the training.

## **Can high school or college students do apprenticeships at the same time they are doing their studies?**

Yes! Apprentices can be as young as 16 and may start the program while they are still in high school, but each individual RA program will have its own eligibility criteria, including age. Colleges are often used to provide the related technical instruction, with some programs offering college credit and even degrees for completion of the Apprenticeship. Apprenticeships are paid jobs, with the majority of the learning conducted while on the job under the supervision of a qualified mentor, and individuals are usually expected to work full time during the Apprenticeship.

### **How can clean energy apprenticeships spur the economy?**

As employees, apprentices conduct useful work while learning a skilled trade or professional occupation. While not required, most employers also pay for the related instruction costs, and some even pay apprentices to attend classes. So, Apprenticeships spur the economy through both providing productive services for customers of the employer as they grow their workforce, and by providing wages to the Apprentices. While Apprentices are paid a lower wage than a fully qualified person is, they are not accumulating debt during their years of education and training, and are instead earning a wage that allows them to be spending money and support the economy.

According to the U.S. Department of Energy, the number of clean energy jobs grew by 3.9% in 2022. That is a full percentage point more than the growth over all U.S. employment during the same time; or, in other words, the clean energy sector grew 35% faster than the rest of the economy. And clean energy jobs increased in every U.S. state. At the end of 2022, four in 10 total energy jobs were in the clean energy industry, with the solar sector alone employing more people than oil, coal, and natural gas combined. The states experiencing the most rapid clean energy job growth are California, West Virginia, and Texas.

### **How can they employ people in overlooked communities?**

As an earn while you learn model, Apprenticeships offer unparalleled opportunities for people from disadvantaged populations to enter family-sustaining careers in a wide variety of occupations. Apprentices complete high-quality, industry-recognized training while earning a salary, as opposed to other education and training pathways that typically require people to have to pay significant sums of money for classes and commit substantial amounts of unpaid time to completing coursework. The Apprenticeship regulations also ensure that employers are committed to equal opportunity employment in the hiring of apprentices, maintain a safe and harassment-free workplace, and create affirmative action plans to meet diversity goals.

### **Can mid-career workers who lost their jobs do apprenticeships to do a career change?**

Yes! Apprenticeships can provide a pathway into a career for individuals just starting out or for those who are looking to change careers. As with any career change, an individual will need to recognize that they may need to “go back to school” to learn what is needed to be competent in their new role. Doing so through an apprenticeship rather than actually quitting their job and going back to school, means that they will at least be paid some wages while completing their training. Depending on the occupation they are apprenticing in, and the job they are coming from, the apprenticeship wage may be more, less, or about the same as their current position, and will increase as they complete the program.

### **Where do interested individuals go to find out more about apprenticeships and what may be available?**

Whether a jobseeker, employer, training provider, or other workforce stakeholder, the US Department of Labor’s Apprenticeship.gov website is a great place to learn about Registered Apprenticeships. The site has a wealth of information including an Apprenticeship Job Finder tool. To learn about RA opportunities in their region, the local “One Stop” American Job Centers are where to go to understand the local workforce needs and available training opportunities: CareerOneStop.org. Information about the ACE Network can be found on IRECUSA.org.

# MEETING YOUR SKILLS SHORTAGE WITH APPRENTICESHIPS FOR PEOPLE WITH

**Podcast Transcript** Syracuse University  
**Nicholas Wyman**, IWSI America  
**Michael Morris**, Burton Blatt Institute

As an employer, you may struggle to fill vacancies and skills shortages in your organization. But could you find a sustainable solution by setting up an apprenticeship program?

Why not go a little further and make it an inclusive apprenticeship program? I'm talking about people with disabilities, even significant ones. Historically, such people have been excluded from the workforce. They have faced structural and attitudinal barriers to employment.

This is an attitude I am keen to challenge: When you have a vacancy, do you have a certain type of person in mind with a particular background? Could you be open to a broader group of people? Might you expand your perspective about what types of people you could employ?

Hiring an apprentice with a disability won't make you a pioneer because you don't have to reinvent the wheel. There's already plenty of knowledge and best practices about how to go about it. I've worked closely with employers, industry groups, and governments to develop apprenticeship programs that have graduated more than 20,000 people.

As such, I have a few insights to humbly offer on behalf of my organization, IWSI America, a multi-award winner in the apprenticeship and training field. Here are some of the highlights from a recent podcast where Michael Morris, from Syracuse University's Burton Blatt Institute, quizzed me about disability inclusion in apprenticeships. We covered a range of those programs, such as Dental Assistant, Optical Lens Dispenser, Medical Biller and Coder, Pharmacy Technician, Packing/Warehousing, CNC Machinist, and more. For example, we've worked closely with Down Syndrome Innovations in Kansas to help them with apprenticeships in five industries.

## Learning what apprenticeships are not is as important as understanding what they are.

What apprenticeships are NOT:

- An internship
- Work experience
- Short term, or
- Just a pathway to a job.

Apprenticeships are a job, each with a meaningful career pathway. Apprenticeships are one of the world's oldest forms of learning – passing on a skill(s) through hands-on learning. While some organizations might use the term 'apprenticeship' loosely, the gold standard in the U.S. are registered apprenticeships.

## Employers don't have to start from scratch to develop their apprenticeship programs.

What Registered Apprenticeships ARE:

- A model that's easy to adapt and modify to suit employers and their apprentices
- Focused on the skills employers identify they need in their workplace(s)
- The best fit occupation among the more than 1,000 registered with the Department of Labor
- An actual paid job, but combined with training, instruction, and mentoring. Instruction and training could be with the employer/workplace, online, virtual reality-driven, or classroom-based

- Where apprentices learn skills for an occupation in a real workplace, so earn while they learn.

Because apprenticeship programs are highly customizable, apprenticeships are easy to adapt and modify to the needs of an individual with a disability and their employer's workplace. For the 1,000-plus registered apprenticeable occupations, employers have 75% of the apprenticeship program already established through standards and competencies. You just customize the rest to suit your workplace needs.

Here's how to go about it (and there's no secret sauce, just common sense):

- Think about the skills you need. Often, employers will list up to 30 occupations, but I recommend focusing on a maximum of six occupations to start.
- Consider a fully-fledged apprenticeship program (more than 2,000 hours in the workplace and 144 hours of related instruction). Or, if you want to be more inclusive and target people with significant disabilities, a pre-apprenticeship program to cover fundamental workplace skills, literacy, numeracy, etc. Such programs help build confidence and give employers a sense of how well the would-be apprentice might fit into their workplace/culture. Check the Career Launchpad website for information.
- Build mentoring and coaching into your structure. That's in addition to the direct supervision of the apprentice.
- Talk to your state's Department of Rehabilitation or find a disability group to help employers like you with workplace accommodations. Typically, your apprentice with a disability may need help with transport to and from work, for example.
- Reach out to apprenticeship intermediaries, such as IWSI America or the Urban Institute, to tap into our network and find out about incentives and financial support for employers of people with a disability. Those funds aim to cover some of the registration, mentoring, coaching, coursework, and materials, rather than the apprentice's wage.
- Understand the process to register your apprenticeship program may take some weeks in your state. This contrasts with same-day approval in Australia, the country from which I hail. That's why it makes sense not to go about creating a program on your own.
- In the meantime, conduct disability awareness training for all your employees. Allow them to see your workplace from a different perspective and consider how it can become more accessible and accommodating. Chat to existing employees with a disability for feedback on how you can improve your induction, orientation, and workplace culture.

The U.S. has some work to do before we have a systematic, unified approach to inclusive apprenticeships. Help remove barriers by developing an apprenticeship program for your workplace and consider people with a disability to fill those roles. Remember, your first question is: What are the skills I need to fill?

## Keen to listen to the podcast?



# WHAT'S INVOLVED IN DEVELOPING AN INNOVATIVE REGISTERED APPRENTICESHIP PROGRAM FOR PEOPLE WITH DOWN SYNDROME?

## Explainer:

Developing an innovative registered apprenticeship program to celebrate neurodiversity

## Dr. Deborah Williamson

Ph.d., Vice President, IWSI America

## Abstract:

A US specialist disability support and advocacy service has developed a promising registered apprenticeship program with assistance from industry and government partners. The program is innovative because it creates an individualized approach to upskilling young people with Down Syndrome that is also tailored to the needs of the target employer.

This article will detail the process of building intellectual property through a pilot process, and how to work with industry and government partners to sustainably meet skills shortages in high-demand occupations.

The program, to begin in June 2023, is also significant because the registered apprentices, who are aged 18 to 21, will earn \$12 per hour initially, which is more than the \$7.25-per-hour minimum for this youth apprenticeship site in Kansas. (The \$9.50 federal basic minimum rate comes into force on 1 July 2023.) Apprentices will progressively earn up to \$16 per hour within six months if they meet competency standards as industrial manufacturing technicians. The two-year program is part-time.

People with Down Syndrome can face barriers and misconceptions in their quest to secure and retain meaningful paid work. As the most common chromosomal disorder, Down Syndrome occurs in about one in every 700 babies born, says the Centers for Disease Control and Prevention. Such individuals have an average life expectancy of 60 years, a significant improvement from 1960 when they rarely lived into their second decade.

Therefore, the increased life expectancy translates to potential opportunities for people with Down Syndrome to join the open work market and build careers. A McKinsey report provides insights from qualitative and quantitative research into the following positive characteristics of people with Down Syndrome as workers:

- Communicate directly
- Manifest empathy
- Bond with others well, especially their direct supervisor
- Exhibit spontaneous behavior.

As well, the report explains how workplaces inclusive of people with Down Syndrome positively impact organizational health, including:

- Leadership
- External orientation (greater customer satisfaction)
- Culture and climate
- Staff motivation (all staff),
- Coordination and control.

The benefits are mutual because such workers can improve their quality of life through a wider social network, while building marketable skills, and becoming more independent.

However, the report details two barriers to employment: "preparing employees" to receive them and "creating opportunities for growth". One challenge is that people with Down Syndrome typically need to be more closely monitored than staff with other disability types. Another barrier is that existing staff may not know "what to do or how to work with people with disabilities". Additionally, organizations may struggle with the complexity of including people with intellectual disabilities, such as Down Syndrome, in their workplace and culture.

McKinsey states such workers' logical thinking, memory and communication may be limited due to mild-to-moderate cognitive delays. As well, people with Down Syndrome have a higher likelihood of co-morbidities, including congenital heart defects, hearing, and eye issues. Importantly, there are three types of Down Syndrome – Trisomy 21, Mosaicism and Translocation – which means there is a wide range of abilities, according to the National Down Syndrome Society.

This article chronicles the development of an innovative registered apprenticeship program that matches these potential workers with pathways to rewarding and well-paid careers as industrial manufacturing technicians. Key to the program is a partnership between a non-profit organization, employer, apprentice group intermediary, and state government department, involving a range of funding sources.

## The figures: Workers with Down Syndrome

According to the Bureau of Labor Statistics, 23.1% of people with a disability were in the workforce in 2022, a steady rise since 2015. However, there is little data on how many people with Down Syndrome currently work in the US – either in supported or sheltered employment or the open workforce.

A small study into the employment status of 511 people with Down Syndrome across the nation in 2015 found 57% were "working in some capacity". The research, published in the Journal of Applied Research in Intellectual Disabilities found just 3% of them were employed full-time. Overall, those who responded were more likely to work in restaurant/food services, grocery stores, or workshop/warehouse settings.

A snapshot from Australia, which has a National Disability Insurance Scheme, shows that about a third of people with Down Syndrome aged over 25 have paid work, compared to 76% of their peers with the syndrome. Just one in 12 Australian people with the condition are in open employment. More than 70% of people with Down Syndrome who do work are employed by an Australian Disability Enterprise, which pays much less than the open market. About two-thirds of employed people with Down Syndrome work between eight and 30 hours weekly. There is limited literature on how many Australian people with the syndrome are in or have completed apprenticeships.

Meanwhile, the U.S. Department of Labor's goal is to ensure people with disabilities make up at least 7% of participants in registered apprenticeship programs. Such programs must comply with the department's Equal Employment Opportunity EEO regulations for Registered Apprenticeship Programs. One program that gained approval



in early 2023 is in the state of Kansas. According to the Kansas Office of Apprenticeship, it's the first apprenticeship program specifically focused on supporting people with disabilities and other barriers to employment to gain careers in high-wage and high-demand occupations.

### Origin story: How the program came about

The unemployment rate in Kansas has effectively flatlined at 2.9% since December 2022. Overall, in 2022, it was just 2.7%. That skills shortage is what prompted Jarrod Sanderson, the Chief Operating Officer at Nautical Fulfillment & Logistics to approach a not-for-profit disability services organization for a staffing solution. His veteran-owned company was established in 2017, and specializes in fulfillment, manufacturing, warehousing, and storage. It runs five connected companies, which includes Staffing by Starboard.

The not-for-profit organization, Down Syndrome Innovations (DSI) was set up in Kansas nearly four decades ago. It's been supporting and advocating for people with this genetic condition. A key strength is offering pre-employment training, work placement, and boosting people's independent living skills. Sarah Mai is the Vice President of Lifespan Services at DSI.

"We're a lifespan provider, meaning we serve individuals and their families from prenatal diagnosis all the way to the end of their life. We have a unique opportunity to start working on skills at a young age and have a proactive approach to preparing individuals for adulthood. We are connected with over 2,070 people with Down Syndrome in this region and have a constant referral flow. That allows our registered apprenticeship program to be sustainable with incoming youth who are hearing about the program."

Since April 2021, DSI has supported 102 young people with job preparation, placement, and coaching, as well as career advancement, while working with 26 employers. Another seven employers have expressed interest. DSI partners with a variety of employers including retail, hospitality, manufacturing, etc.

DSI's Employment Coordinator Amanda Myers, described an example of a carved job becoming a customized position. A carved job sees an individual work with an employer to create a job matching their skills and abilities.

"We went into a hospital and wrote down a list of all of the tasks that were taking existing staff away from their main job as a Patient Services -Representative. They were getting pulled away from working directly with patients. We created a new role called a Patient Services Representative Assistant which is a 22-hour- per-week job. This position allows staff to work at the highest scope of their role and frees up hours of their day to work on their main tasks. This role can be replicated in other medical centers as well," said Myers.

"Our goal is to meet the needs of employers and match those with an individual's skill set to ensure companies run efficiently. With a lot of places short staffed now, they need people who are a good fit for the position and will stay long term."

A sweet spot DSI has found is helping people with Down Syndrome transition out of high school, beyond unpaid or underpaid work placements and into work that provides a living wage to build their resume. DSI's Lifelong Learning Campus in Mission, Kansas, also opened in 2021 to offer therapeutic services, social networking, short-term work placement, job search, as well as training and support in employment and independent living skills. The non-profit has partnered with Traub & Associates to provide employer training, recruitment strategies, and improve onboarding systems, and retention of employees with all abilities at any sized organization.

### Piloting an idea

DSI has already run small-scale employment initiatives. For the past two years, it's placed 12 participants in customer service roles with the Kansas City Chiefs American football team. This year, the Chiefs are hoping to hire more individuals to total 20 staff with diverse abilities. Their partnership with the Chiefs has now scaled to the Kansas City Royals baseball team who have hired 19 individuals with disabilities for the 2023 season. DSI has found a niche in work placements with its state's professional and sports teams, creating a model that can be refined, and used by other sports teams across the US, said Myers.

"People with Down Syndrome have many strengths and talents they can bring to workplaces. We have individuals with these pre-employment skills ready for the next step, but may not be ready for community-integrated employment, that is, open employment. These apprenticeship programs bridge the gap."

Myers worked with Nautical's Chief Operating Officer, Jarrod Sanderson, to find out more about his workforce needs. They developed and ran an unpaid pilot program from November 2022 to March 2023. Up to 10 participants, aged 18 to their late 30s, attended two days a week on assembly lines to repackage bulk items individually into boxes.

However, DSI's purview is not just to train and support its participants. The pilot program involved training existing staff at Nautical Fulfillment & Logistics on how to work with people with Down Syndrome.

Myers said: "The employer asked us to do a formal training with them, including helpful tips and tricks about working with people of diverse abilities. If we can empower other people and make them feel confident and equipped, that's going to impact so many more people than relying on a job coach [to] provide that."

The familiarization training included letting staff know that people with diverse abilities may need instructions and work tasks detailed visually.

"There are very simple and practical tools to help them to become more independent such as a task list or timer," she said.

DSI's pilot ran through its adult continuing education program to give participants real-world work experience.

"It was a great placement for the individuals because of the routine and structure of the environment, and they're developing skills that are transferrable to other jobs."

To ease participants into their team assembler roles, DSI mentors were on hand to guide participants from the time they clocked on.

"Instead of just having them show up and do a job, we would do an assessment with them at the end of their shift so they could rate themselves on their performance, consider what they did well, and what could be improved," Myers said.

"Some participants assembled boxes that are very easy, whereas others you have to fold intricately to put together. Other participants on the assembly line put objects in the boxes and their peers do quality checks afterwards."

Myers said: "The feedback participants gave was that they really looked forward to going to work and getting hands-on training, doing something meaningful. It was a huge deal for them to see how many boxes they'd completed. They felt productive since they had contributed to their team and could see the finished result."

A key lesson of the pilot was that all participants had different skill levels. This meant some might need to start on a slow production line and work up to quicker ones. The aim was to "meet people where they were at".

Meanwhile, Sanderson was also happy with the pilot.

“DSI’s clients are incredibly diligent, motivated workers whose spirit and light fundamentally change the landscape of our worksites. Similarly, DSI’s staff are deeply caring people whose dedication to their craft shows in the quality and character of their work.

We couldn’t be happier with how our partnership has blossomed and we look forward to that partnership continuing to grow.”

Sanderson and Myers spoke about the program at the Kansas State Capitol on World Down Syndrome Day in March 2023. The entire group received a standing ovation on the House floor.

### Leveraging the pilot’s success

A successful pilot was just one step towards creating a registered apprenticeship program, which needed to detail a broader and deeper suite of new skills for participants to accomplish. It also meant they would be able to segue from team assembler to qualified industrial manufacturing production technician.

“There is a whole list of competencies that sequence from beginning to end, including using box cutters to open bulk items, and spacing items appropriately on the assembly line. There’s also a certain way to place items on a pallet so they can be packed and lifted correctly,” said Myers.

DSI reached out to the Kansas Office of Apprenticeship in late 2022. The Department of Labor and the State of Kansas recognizes this office to authorize registered apprenticeship programs in that state.

To be approved, the registered apprenticeship program needed these five elements:

- Job training
- Related technical instruction
- Mentorship
- Wage progression, and
- Industry-recognized credentials.

The Kansas Apprenticeship Council approved the DSI apprenticeship program by a majority vote on 24 February 2023, declaring it an “extremely robust program”.

### Securing funding

DSI had partnered with group apprentice intermediary IWSI America to develop the program and, once it was approved, source incentive funding and technical assistance. IWSI America, and its partner the Urban Institute, are participating in a five-year national initiative funded by the US Department of Labor to grow registered youth apprenticeship.

But there was a tight timeline.

Myers said: “We were on deadline for our funding application and IWSI said there was only a certain amount of funds left. We had to line up our apprentices to be ready to start.”

That’s when DSI approached families of would-be apprentices to officially join the program.

“We needed to do an information session with parents and their adult children; take them to the job site, have them try the job, make sure it’s a good fit.”

Myers recalls being on a deadline to get the final apprentice list over the line to secure funding.

“I remember sitting on the floor because my computer charger wouldn’t connect all the way to the table. Me and a couple of coworkers were gathering all of the information about the apprentices as quickly as

possible. It was just crazy, but we had so much energy. Luckily, we had a database with all the information we needed to populate the funding application. That’s not a Friday I’ll forget.”

More than 30 people – including those with no prior link to DSI – applied to be part of the program. Most have unpaid work experience, others none at all, but they have the skills to work.

According to Myers, the system DSI developed to help Nautical with recruitment, orientation, and onboarding is inclusive and hands-on.

“It’s a system employers can use for everybody,” she said.

The finer details of the registered apprenticeship program give insights into why it’s distinctive. Normally an industrial manufacturing production technician apprenticeship would take one year for those working 40 hours a week. But DSI’s participants will take two years because they’ll work part-time. If they were full-time, they would not receive government disability funding, which is why the DSI apprenticeship needed approval to extend the length. Apprentices will do 256 hours of training, significantly more than the 144-hour minimum for registered apprenticeships. This will provide them the skills to maintain their job long-term.

Thanks to the incentive funding secured through IWSI, DSI will provide one job coach for four to six participants, depending on the latter’s individual needs.

“The job coaches aren’t one-to-one, but are there to assist with transitional times, any extra needs, visuals, and resources. They’re there at the beginning to help ensure the success of each individual, but the goal is that they won’t be there in the long term,” said Myers.

Existing staff supplement this as mentors offering on-the-job training. The apprenticeship program does not cost anything for Nautical Fulfillment & Logistics, which will apply for a Work Opportunity Tax Credit, so will receive funding. The company is already an approved site because they hire individuals from marginalized populations.

By December 2023, apprentices will be earning \$16 per hour if they meet the required competencies. That is the same beginning rate as adult workers without a disability. DSI’s apprentices will work at one site, but there is potential to expand to other Nautical sites. Once apprentices graduate, they have a good chance of ongoing permanent employment with Nautical or finding paid work elsewhere, Myers said.

### Changing the narrative about disability employment

Mai, DSI’s Lifespan Services Vice President, said what will help ensure the apprentice program’s success is DSI’s “culture and expertise surrounding the program”. For her, it is not about seeing employers hire people with developmental disabilities as a “trend or charitable effort”.

“Disability employment organizations such as ours need to be systems minded, really sensitive to the industries of the region. We have to be very authentic about the strengths and limitations of our apprentices and have high expectations. It’s about really looking at the needs of employees and employers to work out what we can satisfy. We all have to be collaborative, flexible, and adaptable.

“It’s piecing together the puzzle to find where everybody fits. It’s important to have transparency with employers and establish relationships where you can have those difficult conversations and be able to learn and grow together. We’re focused on progress, not perfection.”

Mai said her organization also aims to create thought leadership to “change the narrative of employment for people with developmental disabilities”.

“We’re not just saying, let’s get you a job. We’re talking about them

pursuing their professional career. They have those same desires and rights, but they're not always able to access those opportunities.”

DSI is practicing this philosophy of empowering experienced individuals with Down Syndrome to teach individuals with less work experience in their programs. It's even guiding parents on how to teach employment skills to their children with Down Syndrome at home.

“We integrate this in our caregiver information. There are skills that they can be working on at five years old that will prepare them for employment as an adult. Parents can start to train their children on resilience, adversity, stamina, being flexible, and having a positive attitude rather than leaving it to the workplace when their children are 20 years old.”

DSI is doing its bit to start people with Down Syndrome on the right foot to employment.

Anderson, from the Kansas Office of Apprenticeship, offers this advice to employers looking to create a similar registered program to DSI.

“Focus on those high wage and high demand occupations that just need to be looked at differently to create robust, and successful employment growth models for neurodiverse or people who have disabilities. It is doable, can be developed in the best interest of the employee and employer and will ultimately have a great payoff for everyone involved.”

#### Useful links:

<https://www.kansasworks.com/>  
<https://ksapprenticeship.org/become-an-apprentice/>

Watch the key people involved in DSI apprenticeship program talk about it in the Kansas House of Representatives on World Down Syndrome Day  
[https://www.youtube.com/live/\\_fb7hrJncE8?feature=share](https://www.youtube.com/live/_fb7hrJncE8?feature=share)

#### Links used, repeated here:

**Down Syndrome Innovations**  
<https://kcdsi.org/>

**Centers for Disease Control and Prevention**  
<https://www.cdc.gov/ncbddd/birthdefects/downsyndrome/data.html>

**60 years**  
<https://www.nads.org/resources/facts-about-down-syndrome/>

**Second decade**  
<https://www.cdc.gov/ncbddd/birthdefects/downsyndrome/data.html>

**McKinsey report**  
<https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-value-that-employees-with-down-syndrome-can-add-to-organizations>

**Report**  
<https://www.mckinsey.com/-/media/mckinsey/industries/public%20and%20social%20sector/our%20insights/the%20value%20that%20employees%20with%20down%20syndrome%20can%20add%20to%20organizations/the-value-that-employees-with-down-syndrome-can-add-to-organizations.pdf>

**Co-morbidities**  
<https://www.cdc.gov/ncbddd/birthdefects/downsyndrome/data.html>

**National Down Syndrome Society**  
<https://ndss.org/about>

**Bureau of Labor Statistics**  
<https://www.bls.gov/opub/ted/2023/employment-population-ratio-for-people-with-a-disability-increases-to-21-3-percent-in-2022.htm>

**Journal of Applied Research in Intellectual Disabilities**  
<https://www.nchpad.org/1415/6293/>

## Employment in Adults with Down Syndrome

**Snapshot from Australia**  
<https://www.downsyndrome.org.au/about-down-syndrome/statistics/employment-statistics/>

**National Disability Insurance Scheme**  
<https://www.ndis.gov.au/>

**Department of Labor**  
<https://inclusiveapprenticeship.org/>

**Equal Employment Opportunity EEO regulations for registered apprenticeship programs**  
<https://inclusiveapprenticeship.org/apprenticeship-equal-employment-opportunity-toolkit/>

**Lifelong Learning Campus**  
<https://kcdsi.org/cause/lifelong-learning-campus/>  
**Traub & Associates**  
<https://traubassoc.com/>

**2.9%**  
[https://ycharts.com/indicators/kansas\\_unemployment\\_rate#:~:text=Kansas%20unemployment%20Rate%20is%20at,long%20term%20average%20of%204.61%25.](https://ycharts.com/indicators/kansas_unemployment_rate#:~:text=Kansas%20unemployment%20Rate%20is%20at,long%20term%20average%20of%204.61%25.)

**Inclusive apprenticeship**  
<https://www.urban.org/research/publication/inclusive-apprenticeship>

**in 2022**  
<https://www.statista.com/statistics/189431/unemployment-rate-in-kansas-since-1992/>

**Kansas City Royals**  
<https://www.mlb.com/royals>

**Kansas City Chiefs**  
<https://www.chiefs.com>

**Sarah Mai**  
<https://www.linkedin.com/in/sarahmaiot/>

**Amanda Myers**  
<https://www.linkedin.com/in/amanda-e-myers/>

# ONE WOMAN'S QUEST TO HELP MEET THE NATIONAL SKILLS GAP IN MANUFACTURING WHILE SIMULTANEOUSLY CHANGING THE LIVES OF THOSE FROM UNDERSERVED COMMUNITIES EVERYWHERE

Andrew Sezonov, Vice President, IWSI America

It's a stark statistic. An estimated 2.3 million manufacturing jobs will be unfilled by 2030 due to the skills gap, according to a study by Deloitte and the Manufacturing Institute. More than 800 U.S.-based manufacturing leaders contributed to that review.

A renaissance in manufacturing is gathering speed. It's playing catch-up after 1.4 million manufacturing jobs were lost at the start of the pandemic. The Manufacturing Institute says the highest number of job vacancies posted in the year to the end of May 2023 were in:

- Computer and electronic products
- Transportation equipment
- Food manufacturing
- Machinery, and
- Chemicals.

Far from the stereotype of dusty and greasy factory setups, manufacturers are increasingly adopting ICT-enabled production tools. Ericsson IndustryLab says these include artificial intelligence software, video recognition and analytics, remote control of machines, robots and vehicles, automated guided vehicles, autonomous mobile robots, augmented reality, digital twins, virtual reality, collaborative robots, and even exoskeletons.

Even though automation and robots feature strongly in this sector's future, there are still dynamic roles and opportunities for humans. They're the ones who'll need to design, monitor, repair, and maintain the machinery and robots, and more. It's meant typical blue-collar roles have been morphing into white-collar jobs across the globe, says Ericsson. In fact, just one in five manufacturers believe the sector will need fewer workers. That agrees with a Deloitte report which found UK technology had created 3.5 million new jobs, more than offsetting the 800,000 jobs that were lost. Integrating digital technologies and human capital is also helping firms gain a competitive advantage as they move towards net-zero manufacturing.

This is what else Ericsson Industry Labs says about the global manufacturing sector:

- 7 out of 10 production staff say they need to boost their data analysis skills, ability to think outside the box, and programming
- ICT-enabled production tools are helping create a "smarter, swifter, safer production employee"
- Three-quarters of manufacturers today say that humans will make at least half of all production decisions, despite the move to full automation, and
- Manufacturing-as-a-service and pop-up factories will be common by 2030.

## Dealing with the skills mismatch

The mismatch between the skills available and those manufacturers' needs will continue. It gives an impetus for institutions to offer specialized programs for hands-on learning built on strong collaborations with industry.

For six decades, a small not-for-profit Californian college has been doing just that. The NTMA Machinist Career College in Santa Fe Springs nurtures a vibrant community of instructors, administrators, and

employers supporting students on their career journey. It's opening the door to a diverse range of career opportunities in manufacturing. Because the demand is so high, the college can easily find industry jobs for all its candidates, says Danielle Skinner, its president since late 2019.

Her college's latest offering is an apprenticeship program that started in late June in partnership with 15 employers. One for every apprentice. The program pivots nicely from a seven-month full-time certificate program NTMA runs to equip people to enter a career as a machinist.

"There's plenty of employment opportunities within 15 miles of our location and all across southern California. In close proximity to our training facility are eight to ten machine shops and within a 10-15 mile radius at least 50 more. The industry currently has approximately 900,000 openings nationwide and will have another 2.3 million by 2030. And an additional more than a 40% drop due to staff retirements in the next 15 to 20 years."

"We offer graduates lifetime placement. So if a graduate moves or if an employer isn't a good fit for them, we'll find them another employer; we always counsel our students to understand the importance of leaving a job on good standings as you never know if you might cross that employer's path again... Our students are working across the country and we can place them in any state they reside."

## High-tech workshops that smell of bleach

She also turns the 'dull, dirty workshop' stereotype around.

"These workshops have to be clean, so they smell like fresh cleanser and bleached clean floors. They also have high-powered filters to take the dust and smell.

"Employees learn to manage their areas. They'll have a specified area in and around their machine and they're responsible for preparing and maintaining their station while working there."

Metal is only one of the materials they'll work with as machinists. They'll be able to machine plastic (including for 3D printers), gemstone, and other precious metals. Students who excel may be employed by SpaceX in Hawthorne, CA. Other employers include those in aerospace, medical, transport, etc., including Robinson Helicopters, Northrop Grumman, Howmet, and LESI Aerospace. One partner employer, Commerce Springs, manufactures springs that range from those that fit into a pen to ones powerful enough to propel rockets. NTMA has 1,600 California-based employers on its books, and 300 more based interstate.

Through a partnership with the Work Force Investment Board (WIOA), and PAC (Parole Action Committee), NTMA has the ability to provide tuition funding resources for students who are unemployed or have previously been incarcerated that opted into her program.

"Majority of students are able to use third-party and/or federal funds to cover their tuition cost to attend our program, so for our typical student, they're not out of pocket to train with us."

## A James Bond edge to training

When they walk in the door to begin the program, each student gets a

toolbox, backpack, instruments, books, and five uniforms; they won't need to pay for supplies, books, or any additional expenses while in our program. They even receive a display case to show off what they've made during their training.

The seven-month course is only offered in person and each cohort has between 20 and 40 students. They'll range in age from school leavers in their teens to 20s to career changers in their 40s and beyond, even in their 60s. The course is split into five modules, each lasting six weeks.

"We run the gamut of everything from the manual machining, lathe and the mill, blueprint reading, all the way to computer-based machining (CNC Machining). Each module has a project attached. As they go through the program they will, through the machining of these projects, learn how to machine to specific measurements and their projects require them to build it to specific measurements. If it's off by the smallest of margins, it's wrong," Danielle says.

Students only need to be at the college for four and one-half hours each weekday, except for Fridays, and can choose different shifts. She has 15 full-time and six part-time instructors, plus 14 administrative staff including herself. After their classes, students can "hang out and stay," with her instructors who offer tutoring and guidance so they can "work on the machines in a safe space."

"Hands-on and visual learning, getting tactile is what we're big on, so it's not about sitting in a classroom for six hours straight."

Math anxiety might prevent some would-be students from signing up.

"I spoke with a man recently in his 40s and he said that was his biggest concern. He still carried the high-school trauma of not understanding math, and it's why he hadn't pushed forward in his career over the years," Danielle says.

She explains that the course assumes little mathematical understanding, so "everyone's starting at the same level," and we support them to learn. And that man is now halfway through the program.

"I get so emotional because there are people who don't believe in themselves, and I watch them transform and get into well-paying machining careers through this training."

By modules 4 and 5, students are ready to meet employers at a career fair. Typically, students get hired within a couple of weeks into their fifth module, she says. Once they complete the course, they gain a nationally recognized certification. Their starting salary is on average between \$23 to \$27 per hour, and most employers offer increases over six months, with plenty of overtime available. Experienced machinists can earn up to \$50+ an hour, plus overtime.

### Breaking the gender stereotype

Danielle says for every 10 students, only three are female.

"Women do great in the industry. They generally start at entry-level and within two years have progressed into some form of lead roles. I don't know any of our female graduates who haven't ended up in lead roles or more specific key roles in the industry such as Research and Development or Inspection."

A female graduate of ours was headhunted to work for a Texas business. "They offered her a down payment on a house there, or the company said they'd pay her rent for a year. She took the down payment. The job is very specialized, dealing with precious metals and gemstones."

NTMA has a partnership with a small, women-owned aerospace machine shop, KAP Manufacturing, since it was set up in 1997. It won the Nunn Perry Award in 2008, says Danielle.

"Our staff has grown in ability and knowledge through NTMA," says Kathy D'Amato, KAP's President.

"NTMA has helped us stay competitive as our employees must be trained in the latest technologies. Last year we were named as one of the ULA Suppliers of the Year."

Another employer who's worked with NTMA for several years is aerospace and commercial manufacturer J & F Machine Inc. President Micheline Varnum says many of its staff began their manufacturing careers after attending the NTMA college.

"Three of our most recent hires graduated from this school and were recruited through the career advisory board process held on the campus. Two of these hires I call 'jewels' because they have excelled and absorbed additional knowledge and training like sponges. Alex has learned and leads in five-axis milling and CNC grinding, while Julian became a proficient CNC mill machinist and now has taken on the responsibility of CNC inspector," says Micheline. "We appreciate the path NTMA has provided for these individuals and our industry."

Meanwhile, thanks to the program, M & R Engineering has experienced 100% success in converting employees with "no machining background" into machinists and inspectors. Customer Relationship Manager, Elizabeth Potts, says her business has also developed its own apprenticeship, and NTMA training is a key part of that.

And at Aerostealth Engineering, they're using NTMA's course for entry-level staff as well as professional development for experienced staff. Nicholas R Ortiz, President and CEO of Aerostealth, says the college has been a "great source of well-trained, entry-level machinists."

"It teaches students the basics of machining and is a great, well-rounded foundation to start a career in machining, CNC programming, mold making, and tool and die making fields."

### Machining, a STEM career with promise

For Danielle, her college's biggest achievement is changing lives.

"We're teaching people to become machinists and establish a very viable and lucrative career. The stepping stone is just a robust, seven-month training program."

"We'll always need machinists. Virtually everything we come into contact with in our daily lives has been touched by a machine at some point. This is a growing STEM career hiding in plain sight."

More recently, she's been enhancing her college's offerings to meet the industry's demand for deeper and broader skills. She gained Federal approval through the Department of Labor in late February to run a registered apprenticeship program, thanks to guidance from group apprentice intermediary IWSI America. The program was "built perfectly" for the Department of Labor's go-ahead, Danielle says.

Apprentices will complete the certificate training first, then spend the rest of the two years based at their employer's workplace.

"An apprenticeship makes perfect sense because we already have the employer partnerships in place and our well-honed certification program. I'm really excited to be giving my students access to a stronger career pathway."

It's a step in the right direction to meet the skills gap. At the helm of the only specialist machinist career college in the country, Danielle is definitely doing some heavy lifting for the manufacturing sector.

"If the word 'apprenticeship' is in the minds of people who have the platform, and the pulpit, to get the word out, that's all the better to get machining back on the map and get people re-engaged in working."

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#### Manufacturing Institute

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<https://www.themanufacturinginstitute.org/on-the-job-market-current-trends-july-2023-18304/?stream=workforce-news>

#### Ericsson Industry Lab

<https://www.ericsson.com/4aca53/assets/local/reports-papers/industrylab/doc/17112021-ericsson-future-of-enterprise-report.pdf>

#### Net-zero manufacturing

<https://www.sciencedirect.com/science/article/abs/pii/S0921344922005882>

#### Californian state approval

<https://www.bppe.ca.gov/#:~:text=The%20Bureau%20protects%20students%20and,student%20and%20consumer%20complaints%2C%20and>

# MENTORING APPRENTICES WITH DISABILITIES

**Dr. Stephen Hamilton**  
Professor Emeritus, Cornell University

Employers and policymakers increasingly recognize the effectiveness of apprenticeship as a means of developing a productive workforce. Both state and federal governments are investing substantial resources to promote its growth. People with disabilities can benefit from apprenticeship even more than others because it provides multiple sources of support for novices as they acquire both “hard” and “soft” skills. A skilled and caring mentor is the most important of those supports. Because apprenticeship is new to most employers outside of the construction industry, they can find the prospect of identifying, training, and supporting mentors for apprentices to be daunting. The purpose of this paper is to explain how apprenticeship works, what mentors do, and what employers can do to help them, emphasizing apprentices with disabilities.

Apprenticeship enables people to enter the workforce by providing step-by-step training and multi-dimensional support as they acquire new skills and assume their place in a work organization. It is especially valuable for people with disabilities who have had little or no work experience and are learning to be productive in a workplace that wasn’t designed with them in mind. Apprenticeship is also valuable to employers. Apprentices receive wages commensurate with their productivity while they gain the technical, personal, and social competencies that enhance their productivity. Employers that take on apprentices are not obligated to hire them upon completion and they have the right to dismiss any who are making inadequate progress. However, by the time an apprentice completes their training, after a year or more, their employer has detailed knowledge of their reliability, diligence, and fit with the organization. Apprentices too, know their workplace well, have attachments to co-workers, and tend to be loyal to the employer who trained them, especially those with disabilities. Apprentices tend to remain where they were trained.

Apprentices in medieval Europe were indentured to a master—a skilled craftsman and shop owner—who promised their parents to teach them the trade and often to care for them as a member of the household as well. That relationship between an experienced teacher and a novice learner remains at the center of apprenticeship even as apprentices are now much more likely to be in large factories, laboratories, commercial establishments, and offices rather than small shops. As a result, their mentors are rarely shop owners. Rather, they are usually exceptionally skilled and caring employees selected for the role.

Mentoring is critical to all apprentices. Mentors connect their apprentices to the workplace and to the competencies required by the occupation they are learning. The personal bond that arises between a mentor and apprentice powers the experience. Apprentices with disabilities need the same mentoring as others plus some additional and more specialized mentoring just for them. We begin by describing the mentoring that all apprentices should receive and attribute it, initially, to a single mentor, an experienced worker whom the apprentice observes and helps.

## Mentoring all Apprentices

Working with their apprentice at their side, the mentor teaches by explaining the work they are doing—what they are doing, how they are doing it, and why they do it in a particular way. Mentors are advisors as well as teachers, helping their apprentices deal with matters related to the larger workplace, including tips about unwritten rules, how to please a demanding boss, and how to build a career. They may need to bolster their apprentice’s self-confidence. Having little previous work experience, an apprentice may need extra encouragement and praise to feel able to

contribute. Mentors may act as mediators, facilitating dialogue between apprentices, supervisors, and co-workers to resolve difficulties and as advocates, opening opportunities for them.

## Apprentices need to gain the following kinds of competencies:

**Technical Competence** – knowledge and skills required to do the work at a high level, such as:

- Organizing and completing work tasks,
- Meeting productivity and safety standards,
- Using tools and/or equipment properly.
- Problem Solving and Critical Thinking – ability to:
  - Diagnose and resolve problems,
  - Cope with novel challenges,
  - Come up with new solutions,
  - Test those solutions.

• **Personal Competence** – capacity to be a good worker and pursue a productive career, such as:

- Drive or initiative,
- Self-confidence,
- Learning to learn,
- Career planning.

• **Social Competence** – ability to fit into and contribute to a work organization, such as:

- Teamwork,
- Communication,
- Following rules.

## On-the-Job Teaching

Mentors Teach Apprentices by:

- Demonstrating how to do the work,
- Explaining what they are doing and why,
- Monitoring apprentices’ work and giving constructive feedback,
- Asking reflective questions,
- Engaging with their apprentices in joint problem solving.

As teachers, apprentices’ mentors have several advantages over teachers in conventional classrooms. First, they are teaching one person, not a whole class. Second, apprentices are no longer in compulsory education; they have chosen the occupation they are learning and the place where they are learning it. Mentors can count on apprentices’ motivation to learn. Third, mentors demonstrate how to do a task while explaining it. Their lessons are not abstract. When mentors convey general principles, those principles are directly connected to practical application. Fourth, mentors can quickly say to their apprentice, “Now you try,” and instruct, correct, and praise as the apprentice makes use of what they have been shown. This gives both apprentice and mentor immediate feedback on what the apprentice absorbed and what remains to be learned. Apprentices don’t ask as pupils often do, “Why do we have to learn this?” because lesson and purpose come at the same time.

Teaching technical competence is easiest for most mentors. They know how to do their job and probably remember at least some of how they learned it. But it is not enough for a mentor to do the work while their apprentice watches. Good apprentices adopt the habit of thinking out loud, verbalizing what they are doing and why, slowing down a procedure they can do quickly and pointing out the fine points that the apprentice would likely miss otherwise.

Along with demonstrating and explaining, mentors watch closely as their apprentices try to complete a task and give constructive feedback. Constructive feedback is specific and timely; it is about behavior, not motives or character; and it includes praise as well as correction. Some feedback is built into the work. The apprentice can often see immediately that what they tried didn't work. They need feedback to help them figure out why and what to do about it. Mentoring an apprentice is like coaching an athlete in this way. A basketball player who misses a shot or a gymnast who stumbles on a dismount is painfully aware of their failure and anxious for feedback that will help them do better next time.

Teaching problem solving and critical thinking is less clear-cut than teaching technical competence because the competencies are less definite. Someone who is good at solving some problems may not be able to solve others. But apprentices need to learn to solve problems and think critically to become experts. Experts are able to do work that isn't routine, to figure out why something isn't working and solve the problem. They are able to adapt quickly when a new procedure is introduced and help identify needed changes. Work that is routine is likely to be automated or off-shored, making it inappropriate for apprenticeship training.

Asking reflective questions is a good way to teach critical thinking. Reflective questions can't be answered yes or no. They have multiple possible answers. They require thinking, which challenges the apprentice to put things together, not just remember. Socrates used reflective questions to draw knowledge from his students that they didn't know they had. Asking reflective questions also gives the mentor a clearer vision of what the apprentice understands. Can they predict how the outcome might change if they changed one step in the process? Do they have any thoughts about how the process might be improved? A starting point for teaching problem solving is simply modeling the process, meaning the mentor describes a problem they're working on and what they are doing about it. Ideally they can also involve the apprentice in solving the problem. Outstanding mentors have their apprentices join them in planning and completing tasks with multiple steps that they may not know in advance. Projects of this nature are common in fields like engineering. Mentors in other fields may have to be creative to come up with such opportunities. A dentist had her apprentice do most of the planning for a health fair exhibit for young children. An obstetrician asked her apprentice to compose a guide for expectant mothers about the hospital and its procedures.

### On-the-job Advising

Teaching and advising overlap, but in general, mentors teach technical competence, critical thinking and problem solving, and advise about personal and social competence. Parallel to teaching technical competence, advising about work-related issues can be clear-cut. An apprentice told his mentor that he was bored with the work he was doing and planned to tell his manager he would quit if he didn't get moved to another department. The mentor, naturally, told him that was a terrible idea and warned that the manager was likely to accept his resignation immediately. He suggested a more tactful approach that the apprentice used successfully. Other matters that mentors give advice about are less straightforward. Mentors advise based their best judgment and experience, usually recognizing that other courses of action are also possible.

In addition to such work-related issues as how to deal with a manager, mentors may give advice about career planning. A mentor is likely to know far more than a career counselor what education and training are required to advance in their field. A physical therapist advised her apprentice not to enroll in the local community college's two-year physical therapy assistant program because the credits do not transfer to a four-year physical therapist degree program, a critical fact the apprentice might not have learned from anyone else.

When apprentices come to respect and trust their mentors, they may ask their advice about more personal matters. When those directly affect their work, most mentors are comfortable responding. For example, an apprentice may have trouble getting to work on time or not get enough to eat at home and the mentor may have ideas or know where to refer them for help. But an apprentice might also have trouble concentrating because she just broke up with her boyfriend, which the mentor might express sympathy about but not be ready to give advice. An apprentice told his mentor that he had received several offers to get a credit card and wondered whether that would be a good idea. The mentor, an auto mechanic, replied confidently: A credit card can be useful as long as you never use it to buy something you can't pay for. A mentor who was a lawyer, in contrast, said he would never give anyone financial advice. As the topic moves away from work, some mentors may be hesitant to offer advice. Others may feel close enough to their apprentice and open about sharing their opinions. It is up to each mentor to set the boundaries to their advising function. But mentors should understand that having a close trusting relationship with an adult who isn't a family member is not common for most young people and can be a source of great comfort as they move toward adulthood themselves. If the mentor is willing, the relationship can extend beyond the workplace.

### Teaching and Advising Apprentices with Disabilities

All of the above applies to mentors of apprentices with disabilities, who also require special attention and accommodation. Paradoxically, the starting point for mentoring an apprentice with a disability is understanding their abilities. That is, the choice of an occupation and the training plan should be founded on an understanding of what they can do, not just what they can't. This is challenging because disability is such a capacious term, including a wide range of physical, cognitive, and behavioral issues. Planners must find the match between the occupation's requirements and the apprentice's abilities before making accommodation for their disabilities. Some people on the autism spectrum, for example, are excellent programmers because they can focus intently if they are shielded from unplanned social interactions. A person with limited mobility might be outstanding at customer service. One who is visually impaired might have exceptional auditory acuity or digital dexterity. A mentor must be conscious of both abilities and limitations and able to aid their apprentice in overcoming the latter without condescension, finding the right balance between challenge and support.

### Types of Mentors

The kind of mentor described so far who works alongside an apprentice and has primary responsibility for their learning might be called a daily mentor. But more than one person can mentor an apprentice. In fact, good mentors refer their apprentices to co-workers who are especially skilled at some tasks and good programs assure that apprentices have mentors who do not work with them regularly. We will call them occasional and periodic mentors. An auto repair technician has his apprentice spend a few weeks with the shop's heating and air conditioning expert. A medical records specialist refers her apprentice to the department head for help with an unusual case. These could be called occasional mentors. In a workplace with a culture of continuous teaching and learning, co-workers readily share tips and insights with each other and bring apprentices into their learning community. Such a workplace is what one writer called a mentor-rich environment. Designating one person as an apprentice's daily mentor does not exclude others from offering their advice and assistance. Some aspects of mentoring become a shared responsibility, shifting from one person to another as needed. The only limitation is that an apprentice should always have at least one person they know they can turn to.

Periodic mentors are people who regularly meet with an apprentice but are not co-workers. A unit manager or a staff member responsible for apprenticeship in the organization might perform this role. Such a mentor might, for example, have a monthly meeting where they talk with an apprentice about their progress and ask about any problems they might

be having. This kind of mentor might also meet with the apprentice's daily mentor and might participate in assessing the apprentice's progress, for example, by reviewing their work record, observing them at work, or evaluating a work product.

Another kind of periodic mentor is located outside of the workplace and visits multiple apprentices regularly to assure that they are making good progress and help with any issues that might arise. This mentor does not teach technical competencies but might work on personal and social competencies, for example advising an apprentice on how to get along with a difficult co-worker and possibly intervening with that co-worker and/or the manager to try to resolve the problem. Apprentices with disabilities have greater access to external periodic mentors than most because their case managers assist with this function. In addition to advising and supporting the apprentice, a case manager might explain to the manager that a further accommodation is needed in the workplace or why the apprentice is experiencing difficulty with one task. Case managers are also able to provide other kinds of support, such as transportation and clothing. External mentoring is part of the "wrap-around supports" that enable apprentices and other people with disabilities to thrive at work. Other entities with different names can also provide external mentoring, such as a third-party employer of apprentices, a sponsor of apprenticeships in multiple organizations, an intermediary, a high school or college or other classroom instruction provider, or another supporting organization such as a social services agency or workforce investment board. Ideally apprentices have both internal and external mentors who communicate with each other, with the manager, related technical instruction provider, and with apprentices' parents or guardians.

### Selecting, Training, and Supporting Mentors

Daily mentors are employees who have distinguished themselves in some ways but may have no formal preparation for the role. Selection is the first step toward providing apprentices with good daily mentors. Technical competence is the first selection criterion but it must be joined to other competencies, especially communication. Some mentors draw on related experiences – as parents, athletic coaches, teachers in their faith-based organization, or youth group leader. In most workplaces there are people others turn to if they have a problem they can't solve or if they need advice. Such a person might make a good mentor. Age is often associated with the wisdom and patience a mentor needs, but some young apprentices find it easier to relate to mentors closer in age who are more attuned to their music, dress, and leisure activities. One manager reluctantly paired a youth apprentice with a taciturn loner who proved to be an enthusiastic and effective mentor. Sometimes you can't tell in advance, another reason to encourage occasional mentors – acting in this role can be a tryout, and some may be better at it than expected. Mentors should be pleased to have the responsibility, not feel they had not choice in taking it on. Adults often find the role very gratifying. In many workplaces, being selected as a mentor is a badge of honor. For example, nurses identified as "preceptors" are known to be chosen for their outstanding competence. Managers asking employees to become mentors should clearly explain both the responsibilities and the incentives. Most critical, mentors should be assured that mentoring will be considered part of their job, not an add-on. Mentors whose wages are partly determined by productivity must be assured that they will not lose money in the early stages when their apprentice takes some of their time and that they will receive at least part of the proceeds from the apprentice's productivity as they become more proficient. Ideally, selection is followed by orientation, training, and continuing support. Orientation entails providing a clear and thorough overview of the apprenticeship program and the mentor's role. Mentors should know what their apprentices will be expected to learn and understand what is known as their work process schedule – the set of tasks they will be expected to master and the criteria for assessing mastery. Mentors should also understand the structure of the program – who is responsible for what, to whom they should direct any questions or concerns.

Ideally, mentors receive formal training in multiple sessions so that they can try out things they have learned and then bring their experience back to subsequent sessions. Whereas orientation can be provided in a mostly didactic format – a presentation, print or web-based material – training entails learning skills as well as knowledge and that requires active participation and practice by the mentors. How much and what kind of training can be offered varies considerably. Employers must be willing to release workers for training and the availability of trainers and training is limited. Following are some possible topics:

- What is apprenticeship?
- What is a mentor?
- How can my apprentice and I get acquainted?
- How do apprentices learn and mentors teach?
- What are the boundaries to your willingness and ability to give apprentices advice?
- Who can help you help your apprentice?

Engaging mentors in discussions about their own experiences and about the kinds of situations apprentices' mentors may encounter helps them move past abstractions. Most prospective mentors will have had at least one mentor in their past and perhaps been a mentor in another context such as coaching a youth team or leading a faith-based youth organization. Stories about these experiences help to define what a mentor is and does. Role playing can be an effective way to portray a situation, followed by discussion of the response of the person playing the mentor and even by replaying the scenario with alternative choices.

However long the formal training lasts, mentors should have some kind of continuing support. Their supervisor or manager's check-ins are one form of such support, as are their meetings with periodic mentors, which may occur both with their apprentice and without. Interaction with other mentors is another form of support that can provide reassurance and tips. One benefit of formal training is that participants can get to know each other and maintain their relationship afterward. The key is that effective training is not once-and-done. Mentors have different training needs after they have been working with apprentices for six months than they do initially.

Mentors of apprentices with disabilities need special training and support. Initially that can be general information, advice, and practice about workers with disabilities, but some of it must be personalized. A trainer must help each mentor understand what to expect and how to help their apprentice capitalize on their abilities. Mentors should also be prepared to act as advocates for their apprentices, describing their abilities and introducing them to co-workers so they are welcomed. They should also have ready access to case managers or other experts. The organization, such as California's Department of Rehabilitation, is responsible for providing this kind of training and support.

Periodic mentors are professionals who have training in their role as managers, social workers, case managers, etc. However, they may not be familiar with apprenticeship. They need at least a sound orientation to apprenticeship and their role and they need to be in contact with one or more experts on that topic. In addition, they should be part of a team that regularly communicates about the apprentices' progress and any problems that arise. The daily mentor and apprentice should be at the center of a web of supporters, all committed to assuring the apprentice's success. Parents or guardians should be part of that web.



## Conclusions

Realizing the benefits of apprenticeship for people with disabilities and for employers requires effective mentoring. Mentoring is not one thing but a combination of teaching and advising, advocacy, and many other activities. Nor is it provided by only one person. The workplace and supporting organizations give apprentices access to a web of mentors. These include the daily mentor who works alongside the apprentice, occasional mentors who step in for specific purposes, and periodic mentors who are not the apprentice's co-workers but observe and talk with the apprentice, bringing a different perspective. They may support the mentor as well.

Apprenticeship should not be conceived as an obstacle course, designed to sort the worthy from the unworthy. Once an employer has selected an apprentice and the apprentice has demonstrated that they are capable, the assumption should be that they will successfully complete their training. High-quality mentoring is the most important determinant of apprentices' success. Employers and supporting organizations committed to making it possible for people with disabilities to become productive workers must commit to making their mentors effective.

## Resources for Mentors and Mentor Trainers

**Urban Institute, Mentor Guide for Youth Registered Apprenticeship Programs**  
<https://www.urban.org/research/publication/mentor-guide-youth-registered-apprenticeship-programs>

**Urban Institute Fact Sheet, Mentoring in Practice**  
<https://www.urban.org/research/publication/mentoring-practice>

**Urban Institute, recordings of online mentor training sessions**  
<https://www.urban.org/youth-apprenticeship-intermediary-project/tools-and-technical-assistance>

**HealthCare Career Advancement Program Mentorship Training Program**  
<https://www.hcapinc.org/mentorship-training-program>

**Apprenticeship Carolina online Mentor and Apprentice Training**  
<https://www.apprenticeshipcarolina.com/training.html>

**Harper College Train the Trainer Course Outline**  
<https://www.illinoisworknet.com/Apprenticeship/L/Documents/Train%20the%20Trainer%20Manual.pdf>

ROI on apprenticeship varies considerably depending on, for example, compensation levels, subsidies, and costs incurred, but because apprentices quickly become productive, most employers see a positive return during or soon after the training period. The greatest returns accrue as apprentices remain and gain experience.

See Lerman...

An excellent source on the of employees with disabilities is Nicholas Wyman: **Ready, Willing & Able: Why it pays to hire people with disabilities**. Institute for Workforce Skills & Innovation America.

The US Chamber of Commerce Foundation has an extensive set of resources on "**Talent Pipeline Management®**" to guide employers into new more effective approaches to meeting their need for skilled workers.

See: <https://www.uschamberfoundation.org/talent-pipeline-management>

Some distinguish technical from other competencies in terms of hard and soft skills. "Competencies" include knowledge and dispositions as well as skills. "Soft" carries the wrong implications for the complex and hard-to-teach competencies apprentices need to cope with non-routine events, navigate their workplaces, and build careers. The most thorough treatment of these competencies is found in National Research Council (2012). **Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century**. Committee on Defining Deeper Learning and 21st Century Skills, J. W. Pellegrino & M. L. Hilton (Eds.). Board on Testing and Assessment and Board on Science Education, Division of Behavior and Social Sciences and Education. Washington, DC: National Academies Press. The distinction among technical, personal and social competencies was developed by Hamilton, M. A. & Hamilton, S. F. (1997). **Learning well at work: Choices for quality**. Washington, DC: National School-to-Work Office. Accessible at: <http://hdl.handle.net/2027/pur1.32754066643176>

In the apprenticeship program described by Hamilton & Hamilton (1997), we used the term "coach" for what is called here daily mentor. "Mentor" has been fixed in practice and regulations.

Freedman, (1999). **The kindness of strangers: Adult mentors, urban youth, and the new voluntarism**. Cambridge University Press.

The developmental psychologist Erik Erikson, identified "generativity" as the key developmental task of older adulthood, meaning doing things that will endure, leave a legacy. Mentoring is an excellent way of meeting this need. See Erikson, E. H. (1993). **Childhood and society**. WW Norton & Company.

## Employment in Adults with Down Syndrome

**Snapshot from Australia**  
<https://www.downsyndrome.org.au/about-down-syndrome/statistics/employment-statistics/>

**National Disability Insurance Scheme**  
<https://www.ndis.gov.au/>

**Department of Labor**  
<https://inclusiveapprenticeship.org/>

**Equal Employment Opportunity EEO regulations for registered apprenticeship programs**  
<https://inclusiveapprenticeship.org/apprenticeship-equal-employment-opportunity-toolkit/>

**Lifelong Learning Campus**  
<https://kcdisi.org/cause/lifelong-learning-campus/>  
**Traub & Associates**  
<https://traubassoc.com/>

**2.9%**  
[https://ycharts.com/indicators/kansas\\_unemployment\\_rate#:~:text=Kansas%20unemployment%20Rate%20is%20at,long%20term%20average%20of%204.61%25.](https://ycharts.com/indicators/kansas_unemployment_rate#:~:text=Kansas%20unemployment%20Rate%20is%20at,long%20term%20average%20of%204.61%25.)

**Inclusive apprenticeship**  
<https://www.urban.org/research/publication/inclusive-apprenticeship>

**in 2022**  
<https://www.statista.com/statistics/189431/unemployment-rate-in-kansas-since-1992/>

**Kansas City Royals**  
<https://www.mlb.com/royals>

**Kansas City Chiefs**  
<https://www.chiefs.com>

**Sarah Mai**  
<https://www.linkedin.com/in/sarahmaiot/>

**Amanda Myers**  
<https://www.linkedin.com/in/amanda-e-myers/>

# WHY REGISTERED APPRENTICESHIP IS A GREAT OPTION FOR JUVENILE

DR. DEBORAH WILLIAMSON, PH.D., VICE PRESIDENT, IWSI AMERICA

A stolen bike. A schoolyard tussle complete with shiners. A neighbor's garage door graffitied. These seemingly minor incidents can start a young person down the road to delinquency. And once down that road, some young people will find themselves in the juvenile justice system.

I worked in that system for many years, and, with my colleagues, strove to help young offenders break out of delinquency by getting them to take responsibility for their actions and steering them toward more productive choices.

A key tool for doing so was the court diversion program. My staff and I built diversion agreements for low level offenders that:

- were offense specific,
- provided opportunities to educate those on our caseload about the law,
- addressed the needs of victims,
- acquainted our clients with a broad range of services available in their local communities, and
- reduced recidivism.

One of the strongest elements of our diversion agreements was a structured community service program. The most successful programs treated juvenile referrals as regular candidates for employment, complete with formal job interviews and periodic performance assessments.

These work arrangements often led to strong connections between employers and our juvenile clients, with many employers writing letters of recommendation, serving as job references and offering certificates of completion.

Our program had many positive outcomes because of these connections, including:

- a high number of completed diversion agreements,
- low recidivism, and
- significantly reduced referral rates to formal court.

But I believe our outcomes could have been even better if we'd known about registered apprenticeship.

## What is Registered Apprenticeship?

Registered apprenticeship combines classroom instruction with on-the-job training under the guidance of an experienced mentor.

A quality registered apprenticeship program:

- creates rewarding career pathways for youth and young adults,
- offers paid employment,
- helps employers build a talent pipeline and eliminate skill shortages, and
- helps local businesses, educational institutions, and other stakeholders establish a sustainable youth apprenticeship framework.

I've been working with the Department of Labor's Youth Apprenticeship Initiative since I left the court system ten years ago, and I believe it's a great option for young people in general, but especially for those who've run afoul of the law. Here are a few reasons why:

## Apprenticeship Mitigates Risk Factors and Promotes Resiliency

Registered apprenticeship programs provide young people with developmentally appropriate and challenging opportunities to contribute

at work, under the guidance of an experienced mentor. Instead of being labeled as delinquent, they are seen as, and perhaps more importantly, believe they are, engaged and contributing members of society.

## Competency-Based Frameworks Focus on Real World Learning

Quality registered apprenticeship programs provide competency-based frameworks that focus on skill development rather than memorization. Employers and educators collaborate to create frameworks that link job skills and classroom instruction. What's taught in the classroom is directly related to what's needed on the job – so no more chorus of young voices claiming classroom learning is not relevant to life in the real world.

## Structured Employment Activities Reduce Opportunities for Delinquent Activities

Structured work reduces the opportunity to engage in delinquent behavior. Apprenticeship frameworks set out a schedule of activities that structure an apprentice's work day. Those who adhere to this structured employment and school schedule spend more of their day in positive social engagement, and less or none with delinquent peer groups.

## Mentoring Provides Stability and Referrals to Wrap-Around Services

In registered apprenticeship, a mentor and an apprentice sign a contract. According to Nicholas Wyman, "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 hopeless" (Wyman 2015: 150). If an apprentice is struggling at a placement, they go to their mentor for additional training or other services, including substance abuse counseling, GED services, or training in financial literacy.

## Apprenticeship is Flourishing

In 2020, there were 26,000 apprenticeship programs across the nation, enrolling over 220,000 people. 82,000 individuals graduated from apprenticeship programs with nationally recognized credentials from the Department of Labor. Apprenticeships are available in over 1,000 occupations. And each state has a Registered Apprenticeship office to help you register a program, connect with program sponsors and enroll apprentices.

In my own experience as a juvenile justice practitioner, I've seen that employers are willing to hire young people who've run afoul of the law. And as someone who's spent hours crafting high quality programs for young offenders, I know that registered apprenticeship has all the factors that go into a successful program: structure, employer and community engagement, meaningful learning opportunities and tangible reward.

Bringing apprenticeship into the juvenile justice system will be a great way to help young offenders choose a better path, to the benefit of both themselves and their communities.

# DISABILITY INCLUSION IN REGISTERED APPRENTICESHIP PROGRAMS

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## Introduction

In July 2023, the Department of Labor awarded \$65 million in grants to 45 states to increase expand their Registered Apprenticeship program. This investment comes on the heels of over \$950 million of federal grants targeted for this purpose in the last five years and a growing commitment among federal agencies, state governments, local policy makers, and employers to expand apprenticeship opportunities.<sup>1</sup>

Apprenticeships can bridge the gap between the skills of jobseekers and the demands of employers by combining on-the-job training, mentorship, and classroom instruction with a paycheck. During this time of growing income inequality and technological change, apprenticeships can address the needs of all stakeholders. For apprentices, apprenticeships are an entry point to a highly skilled job that pays well without a college degree. For employers, they can be a strategy to develop a pipeline of skilled employees. For policy makers, they can address the job training needs of marginalized groups who may otherwise be disconnected from the labor force and consequently address historic income inequality.

Apprenticeships may be particularly valuable for people with disabilities, many of whom face multiple barriers to employment.<sup>2</sup> People with disabilities are less likely than others to have a college degree, less likely to have work experience, and tend to have lower incomes. This means that they are also less likely to be able afford post-secondary training.

However, despite their potential for a positive impact, people with disabilities remain underrepresented in apprenticeship programs. Since the Department of Labor began requiring programs to report the disability status of their apprentices in 2019, only 1.5% of apprentices have reported having a disability. This is far from the aspirational goal of 7% set by the Department of Labor's Office of Apprenticeship.

The American apprenticeship system is a complex network involving employers, industry intermediaries, educational institutions, public workforce systems, state apprenticeship agencies, and community organizations. Each has its own set of opportunities and challenges in addressing the low participation rates among people with disabilities.

Given the increasing public investment and bipartisan interest in expanding apprenticeships, now is a critical time to ensure the full inclusion of people with disabilities. To assist in this endeavor, the Disability Inclusive Employment Policy Center will release a series of policy briefs over the next three years. These will explore the challenges and facilitators of developing inclusive apprenticeships and identify policy levers at both state and federal levels to encourage growth in this area.

This inaugural paper will outline the core components of apprenticeships and provide an analysis, based on data from the U.S. Department of Labor's Registered Apprenticeship Partners Information Database System (RAPIDS), of the current utilization rates of apprenticeships among people with disabilities.

## The Basics of Apprenticeships

Apprenticeships are one of the oldest forms of training, involving learning a trade or skilled job under the direction of a senior worker. They were largely unregulated in the U.S. until the enactment of National Apprenticeship Act in 1937. The concept of apprenticeship as a combination of hands-on experience and classroom-based learning has not changed significantly. However, the types of industries using apprenticeships have dramatically expanded. Historically, apprenticeships have focused on skilled trades like carpentry, plumbing, electrical, and manufacturing. Still today, a

large majority of active apprenticeships (68%) are in the construction industry<sup>3</sup>; however, apprenticeships are expanding into industries such as healthcare, finance, business, and information technology. Many, but not all, apprenticeship programs are registered with either the U.S. Department of Labor (DOL) or a State Apprenticeship Agency (SAA) which certifies that programs provide a set of basic requirements that make apprenticeship completion a qualification transferable among employers.

Registered apprenticeships last between one and six years depending on the employer and occupation, with an average of four years. The requirements for completing an apprenticeship may be time-based, competency-based, or a hybrid of the two. Time-based apprenticeships typically include 2,000 hours of on-the-job learning and a minimum of 144 hours of related classroom instruction. In competency-based models, the apprentice progresses through training by successfully demonstrating mastery of skills and knowledge.

Apprenticeships are sponsored and managed by employers, employer associations, labor-management organizations, and independent apprenticeship organization. Sponsors work with either the DOL or their SAA to develop and register their program. The sponsor may provide all elements of the program themselves (on-the-job training and related technical instruction), or they may partner with career schools, community colleges or other education providers to deliver a comprehensive, apprentice-focused experience. All apprentices earn a federally recognized credential after completing their apprenticeship. Some apprentices even earn an associate's or bachelor's degree while they learn on the job.

Apprenticeships are a "learn while you earn" model. Apprentices earn a salary throughout the entire program, even during the registered training portions which can happen away from their job sites. According to the U.S. Department of Labor, the average starting wage for a new apprentice is \$15 an hour and the salary increases as the apprentice gains skills and experiences according to a predetermined schedule which varies by employer, job, and industry. The cost of training, including the apprentice's wages, on-the-job training and mentoring costs, and often much of the tuition for their classroom instruction, is covered by the apprenticeship sponsor. These costs may be partially or fully subsidized by federal or state level incentives. In 23 states, employers may qualify for tax breaks or other subsidies that are specifically targeted towards increasing apprenticeships. Federal workforce development funds may be used to support training expenses and federal student aid including Pell Grants, Federal Work Study.<sup>5</sup> Additional funding is available for apprentices with disabilities through the Vocational Rehabilitation system. Veterans may use the GI bill and the Vocational Rehabilitation and Employment (VR&E) program of the Department of Veterans Affairs to offset the cost of certain apprenticeship training.<sup>6</sup> In addition, the Department of Labor has provided grants to states and intermediary organizations to streamline the process of developing apprenticeship programs, recruiting participants, and supporting employers thus reducing costs to the employer.<sup>7</sup> Despite the upfront costs required of the employers, most find a positive return on investment.<sup>8</sup>

Apprenticeships have a long history in the U.S. Yet, despite their potential to increase employment and wages, they are not widely used, especially outside the traditional trades such as construction and utilities. The number of apprentices has grown 70 percent since 2011. In 2020, 636,000 people were actively participating in one of 26,000 registered apprenticeship programs across country.<sup>9</sup> Even with this growth, the apprenticeships are much less common in the U.S. than in European Countries.<sup>10</sup>

## Apprentices with Disabilities

Federal law and policy encourage the inclusion of people with disabilities in apprenticeship programs. The Americans with Disabilities Act (ADA) prohibits apprenticeship sponsors from discriminating based on disability and requires sponsors to provide reasonable accommodations to applicants and apprentices with disabilities to allow them to perform critical job functions. The Department of Labor's goal that seven percent of a sponsor's apprentices are to be qualified individuals with disabilities requires Registered Apprenticeship sponsors to go a step further and take affirmative action to recruit, hire, retain, and advance apprentices with disabilities.<sup>11</sup>

The DOL's Office of Disability Employment Policy (ODEP) has invested in several programs to support the inclusion of people with disabilities in apprenticeship programs. The two-year Apprenticeship Inclusion Models (AIM) demonstration developed, tested, and disseminated best practices for making apprenticeship more accessible for youth and adults with disabilities. ODEP continues to fund the Partnership on Inclusive Apprenticeship to collaborate with employers and apprenticeship intermediaries to design apprenticeship programs that are available and accessible to people with disabilities. In addition to these initiatives focusing exclusively on disability, more than half of all federal apprenticeship grant programs have included disability as a targeted group.<sup>12</sup> Despite these initiatives, disability is still underrepresented in apprenticeship programs.

### Data

There is no single repository of data from all of the Registered Apprenticeship programs. Data from most programs are maintained in the Registered Apprenticeship Partners Information Data System (RAPIDS) maintained by the U.S. Department of Labor's Employment and Training Administration (DOL-ETA). RAPIDS contains individual level data from the 25 states with federally administered apprenticeship programs and 18 federally recognized State Apprenticeship Agencies (SAAs). The remaining states provide aggregate data to the Department of Labor, but individual level data is not publicly available.

In 2017, DOL began requiring apprenticeship sponsors with five or more apprentices to invite all applicants and apprentices to self-identify their disability status, and sponsors were given two years to comply (29 CFR § 30.11)<sup>13</sup>. We analyzed the individual level RAPIDS data, restricting our analysis to apprentices who started after January 1, 2017. The data indicate the compliance rate has been steadily increasing, as shown in Table 2. By 2021, 62 % of apprentices reported their disability status compared with only 32% in 2017. Among apprentices who reported their disability status, the percentage reporting a disability increased from 0.7% in 2017 to 1.5% by Q3 of 2021.

Apprentices with disabilities differ slightly from apprentices without disabilities (Table 3). Those with disabilities are less likely to be Latinx (15% versus 25%), more likely to be women (17% vs 9%), and more likely to be older (average age 32.9 versus 29.4). More than one-third (34%) of apprentices with disabilities are military veterans compared to 9% of those without disabilities. This is particularly relevant since veterans may be eligible for additional programs and funding sources.

## Inclusion of Disability in Apprenticeship Programs

Despite DOL's aspirational goal of 7% for participation by qualified individuals with disabilities in Registered Apprenticeship programs,<sup>14</sup> only 364 (2.6%) of the 14,227 apprenticeship sponsors represented in the database were reaching the 7% goal in their apprenticeship programs. In fact, 13,186 sponsors (93%) did not record any apprentices with disabilities in the RAPIDS data.

Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021

Most apprenticeships for people with disabilities are highly concentrated in a small number of programs, ranging from low-skilled housekeeping to construction and tech apprenticeships. Sixty-five programs (0.4% of all programs) accounted for over 50% of all apprentices with disabilities. The largest sponsors of apprentices with disabilities take different approaches to including disability (Table 4). IN Laborers, a very large union, sponsored apprenticeship program, hosts 192 apprentices with disabilities accounting for 9% of its apprentices. Challenge Unlimited with 178 apprentices with disabilities focuses exclusively on apprenticeships for people with disabilities. Werner Enterprises, another very large program, actively recruits veterans, many of whom have disabilities, for its truck driver apprenticeship program.

Several organizations including Challenge Unlimited, Abilities First, and Puerto Rico for the Blind focus on lower skilled jobs such as housekeeper, cook, and sewing machine operator. Other programs such as Able Disabled Advocacy, Apprenti, and OpenTechLA focus on careers in technology. Others fall into the traditional and most common apprenticeship occupations like electricians and construction workers.

Apprentices with disabilities are less likely to be in Union/Labor Organizations than apprentices without disabilities. Union/Labor apprenticeships account for almost half of all apprenticeships but only one-quarter of apprentices with disabilities (Table 5).

### Conclusion

With bi-partisan support, Federal and State Governments are committing resources to expanding apprenticeship programs, especially for underserved populations. These programs, which combine classroom learning with on-the-job training and a paycheck are a pathway to economic opportunity for many people, including those with disabilities. Although the number of people with disabilities participating in apprenticeships is growing, apprenticeship programs still have a way to go to meet the full DOL 7% goal of inclusion as only 1.5% of apprentices report having a disability.

Designing and implementing policies to address the underrepresentation of people with disabilities in apprenticeship programs requires more analysis of the reasons behind their absence. A variety of causes may exist.

1. Firms or agencies recruiting for apprenticeships are discriminating against people with disabilities because of misconceptions of their productivity, or because of fear of the expenses associated with accommodations.
2. People with disabilities are not applying for apprenticeships, either because:
  - a. recruitment efforts are not well targeted;
  - b. they do not meet program requirements; or
  - c. they are concerned about losing cash and health care benefits associated with Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI), if the program does not work out, or other reasons.
3. They may be in apprenticeships but are not self-disclosing for fear of discrimination or maybe even because they do not consider themselves to have a "disability".

Our continuing research will explore how these, or possibly other factors, are limiting the reported number of apprentices with disability, as an important step to fashioning the most promising means to close the disability apprenticeship gap.

### Endnotes

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- 11 This goal is consistent with the goal established by the U.S. Department of Labor (US DOL) Office of Federal Contract Compliance Programs (OFCCP) that applies to federal contractors and subcontractors
- 12 U.S. Department of Labor Office of Apprenticeship. (n.d.). Active grants and contracts. Apprenticeship.gov. Retrieved December 1, 2021, from <https://www.apprenticeship.gov/investments-tax-credits-and-tuition-support/active-grants-and-contracts>
- 13 29 CFR § 30.11
- 14 29 CFR § 30.7 - This goal is consistent with the goal established by the U.S. Department of Labor (US DOL) Office of Federal Contract Compliance Programs (OFCCP) that applies to federal contractors and subcontractors.

**Table 1: How inclusive apprenticeships can bridge the gap between skills and employment for people with disabilities**

Challenges faced by people with disabilities in skills development and employment	How quality and inclusive apprenticeships can contribute to solutions
Prejudice: Employers assume that employees with disabilities are less productive and need costly adaptations.	Apprenticeships are an opportunity for people with disabilities to demonstrate their work potential and the contributions they can make to a company.
Lack of work experience is a key obstacle for young people in finding employment, especially for people with disabilities.	Apprenticeship is a way out of the "inexperience-gap". Through company-based training, apprentices gain valuable work experience.
Skills mismatch: Training programs not affiliated with employers or industries are not always up-to-date on technological developments or responsive to industry needs.	During in-company training, apprentices are trained in the immediate skills needed in enterprises and the technology and the equipment used.
Low schooling levels: People with disabilities are less likely to have graduated high school or attended post-secondary education.	Apprenticeship can motivate compensatory schooling: foundational skills (math, literacy, etc.) are acquired more easily if used at the workplace and learners can directly see the connection between classroom and on-the-job learning.
Inadequate learning methodologies: Classroom-based skills development are often not be adequately adjusted to individual learning needs.	Workplace-based learning is "embedded" and supervised on a one-on-one basis – it is thus easier to adapt to individual needs and learning pace.
Cost concerns: People with disabilities may have lower incomes and are less likely to be able to afford post-secondary education. At the same time, available employment opportunities may offer low pay.	Registered apprenticeships require employers to pay at least minimum wage and offer wage increases over time. Most education expenses are covered by the employer or other programs.
Source: Adapted from the International Labor Organization's Making apprenticeships and workplace learning inclusive of persons with disabilities (web: <a href="https://www.ilo.org/global/topics/disability-and-work/WCMS_633257/lang-en/index.htm">ilo.org/global/topics/disability-and-work/WCMS_633257/lang-en/index.htm</a> )	

**Table 2: Disability Self-Identification among Apprentices 2017-2021**

Year	Disability Status			Total	Percentage Reporting Disability Status	Percentage Reporting Disability Status Y / (Y + N)
	Not Provided	No	Yes			
2017	96,479	44,542	296	141,317	32%	0.7%
2018	82,258	74,282	615	157,155	48%	0.8%
2019	74,120	88,179	1,305	163,604	55%	1.5%
2020	48,834	74,907	1,106	124,847	61%	1.5%
2021	25,527	41,207	641	67,375	62%	1.5%
Total	327,218	323,117	3,963	654,298	50%	1.2%

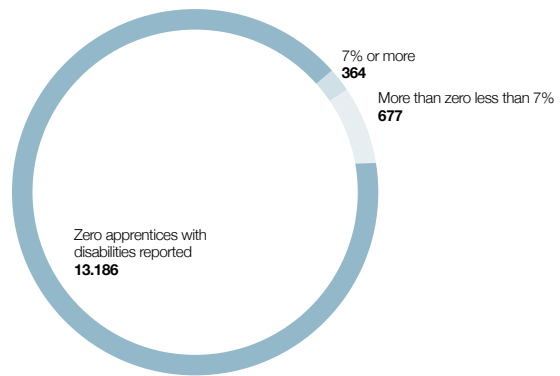
Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021.

**Table 3: Characteristics of Apprentices by Disability Status**

	No Disability With Disability	With Disability
<b>Race/Ethnicity</b>		
Non-Hispanic White	57%	64%
Non-Hispanic Black	12%	15%
Hispanic/Latinx	25%	15%
Indigenous	2%	2%
Asian/Pacific Islander	3%	3%
Other	1%	2%
<b>Gender</b>		
Female	9%	17%
Male	91%	83%
<b>Age Group</b>		
15-20	14%	10%
21-25	28%	20%
26-30	22%	21%
31-40	23%	29%
41+	13%	21%
Average Age	29.4	32.9
<b>Veteran Status</b>		
Veteran	7%	34%
Not a Veteran	90%	64%
Not Provided	3%	2%

Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021. Note: Disability "not provided" is excluded from the table

**Figure 1: Percentage of Apprentices with Disabilities by Number of Programs**



Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021

**Table 4: Largest Sponsors of Apprentices with Disabilities in RAPIDS Database**

Sponsor	Number of Apprentices with Disabilities (2017-2021)	Disability as a Percentage of All Apprentices who reported Disability Status	Occupation
IN Laborers	192	9%	Construction Laborer
Challenge Unlimited, Inc.	178	99%	Housekeeper
Werner Enterprises	162	4%	Truck Driver, Heavy
Able Disabled Advocacy	118	45%	Computer Support Specialist
Adaptive Construction Solutions	94	26%	Telecommunication Tower technician
Apprenti	80	13%	Computer Programmer
Lockheed Martin Corporation	71	9%	General Assembly/Installation
IBEW Local 102, JATC	50	38%	Electrician
Peckham	42	74%	Help Desk Technician
ExxonMobil Apprenticeship Program	40	17%	Refinery Operator
Amazon.Com Services, Inc.	40	9%	Electromechanical Tech
National Center for Healthcare Apprenticeships	39	8%	Home Health Aide
Abilities First	26	100%	Cook
Puerto Rico Industries for the Blind	25	100%	Sewing Machine Operator
OpenTech LA	25	37%	IT Project Manager
Fort Worth Plumbers & Pipefitters	18	10%	Plumber
Plumber	25%	15%	15%

Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021

**Table 5: Apprenticeship Sponsors by Disability Status, 2017-2021**

Type of Sponsor	No Disability	Disability
Employer	24%	34%
Union/Labor	49%	25%
Other	5%	13%
Community Based Organization	1%	7%
Intermediary	1%	7%
Business Association	7%	4%
All Other (State, Federal or City/County Agency; Community College; Foundation; or Workforce Board)	12%	9%

Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021

**Table 6: Disability by Occupational Group, 2017-2021**

Occupational Classification	No Disability	Disability
Number of Apprentices	320,570	3,932
Construction and Extraction	69%	49%
Computer and Mathematical	1%	9%
Installation, Maintenance, and Repair	11%	9%
Production	4%	8%
Transportation and Material Moving	3%	6%
Building and Grounds Cleaning	1%	6%
Healthcare Support	1%	3%
Architecture and Engineering	1%	2%
Healthcare Support	3%	2%
Management	1%	1%
Personal Care and Service	2%	1%

Source: Author's analysis of RAPIDS data base, Q3 2021. Based on apprentices with start dates in 2017-2021

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