

Apprenticeship Inclusion Models (AIM)
For Youth And Adults With Disabilities

Strengthening Supports for People with Disabilities in Pre-Apprenticeships Through Policy, Design, and Practice

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About This Project

The U.S. Department of Labor's Office of Disability Employment Policy (ODEP) sponsored the Apprenticeship Inclusion Models (AIM) initiative. The initiative focused on building capacity for inclusive apprenticeship programs. It also focused on developing and disseminating resources and tools to make apprenticeship onboarding and recruitment, education and training, and workplace experiences and mentoring more inclusive, specifically for people with disabilities. In particular, the initiative sought to learn how inclusive practices from education, workplace, and work-based learning settings could be applied to apprenticeship and pre-apprenticeship programs. The AIM initiative used a universal accessibility lens in its work; thus, its activities were also designed to make apprenticeship programs more accessible for everyone. The initiative produced five briefs that provide information to support the scaling of inclusive apprenticeships and to inform and strengthen future national policy around inclusive apprenticeship, workforce development, and employment.

The AIM Policy AND Practice Briefs

In support of AIM's objective to develop and disseminate resources and tools to make apprenticeship more inclusive of people with disabilities, the initiative has produced five briefs that provide information to support the scaling of inclusive apprenticeships and to inform and strengthen future national policy around inclusive apprenticeship, workforce development, and employment.

The entire series can be found at: <https://www.dol.gov/agencies/odep>

In the series:

- Strengthening Supports for People With Disabilities in Pre-Apprenticeships Through Policy, Design, and Practice
- Funding Inclusive Apprenticeships: Strategies for Braiding, Blending, and Aligning Resources
- Using Universal Design for Learning in Apprenticeship
- Connecting Ticket to Work and Apprenticeships
- Emerging Lessons for Inclusive Apprenticeship Programs: Managing Through the COVID-19 Crisis and Beyond

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Pre-Apprenticeship Policy Brief: Strengthening Supports for People with Disabilities in Pre-Apprenticeships Through Policy, Design, and Practice

Brief Highlights

Expanding apprenticeship opportunities is a key priority of the federal government. Pre-apprenticeship (PA) programs are focused on preparing participants for entry into Registered Apprenticeship programs (RAPs).

The U.S. Department of Labor's definition of a quality [pre-apprenticeship program](#) includes five components specified in Exhibit 1. This exhibit outlines several recommended strategies—identified through interviews and a literature review conducted for this brief—for making PA programs accessible for people with disabilities. These suggested strategies help make PA programs more inclusive, foster Universal Design, and enhance accessibility for youth and adults with disabilities. In turn, supporting accessibility for apprenticeships enables employers to access a broader pool of talent and job seekers with disabilities to attain needed occupational skills training, employment, and financial security.

Provisions in the Workforce Innovation and Opportunity Act of 2014 (WIOA) and the Strengthening Career and Technical Education for the 21st Century Act of 2018 (Perkins V) complement these recommended strategies. For example, Perkins V incorporates a definition of Universal Design for Learning (UDL) and supports training on UDL practices that reduce barriers to instruction. Similarly, WIOA includes provisions that its funded services must be inclusive to all. WIOA also prioritizes support for PA opportunities and cross-agency partnerships.

Exhibit 1. Five Main Components of High-Quality PA Programs

Main Components	Effective Strategies for Designing Inclusive Components to Support Access for People with Disabilities
 <p>Training curriculum (both classroom and applied) that is approved by RAP partners.</p>	<p>Incorporate Universal Design for Learning practices into the program design. This helps foster access to all educational content for all students, including students with disabilities.</p> <p>Research on UDL has demonstrated that it can facilitate improving test scores for students with learning disabilities and expand learning options for diverse learner needs, including students with disabilities.* Interview respondents identified UDL as a key approach to ensuring accessibility for PA programs. Perkins V supports professional development for staff members on the principles and applications of UDL.</p>
 <p>Meaningful hands-on training</p>	<p>Make educational content accessible to individuals with disabilities and consistent with accessibility standards, such as the World Wide Web Consortium's Web Content Accessibility Guidelines.</p> <p>This fosters equal access for people with disabilities to information and documents, such as program applications.</p>
 <p>Strategies that support long-term success, such as helping participants apply to RAPs.</p>	<p>Enhance access to support services for participants with disabilities by establishing partnerships with federally funded and state-funded programs, such as WIOA's Vocational Rehabilitation (VR), Adult, and Youth programs.</p> <p>Interview respondents emphasized that forming these partnerships is a critical strategy for supporting participants. For example, PA programs have established partnerships with local WIOA Title I Adult and Youth programs and state VR programs. WIOA also supports coordination between VR and other workforce programs.</p>
 <p>Access to support services, such as adult basic education and math tutoring support.</p>	
 <p>Facilitated entry to RAPs, such as by making learning credits earned during the PA program count toward the apprenticeship.</p>	<p>Facilitate the transition for people with disabilities from pre-apprenticeships to apprenticeships at the individual and program level.</p> <p>At the individual level, program staff, students, and parents should be provided with information on workplace accommodations, self-disclosure, and rights and responsibilities in the workplace. Both Perkins V and WIOA Title I and IV support this type of training.</p> <p>PA programs can effectively facilitate streamlined entry into RAPs by aligning curricula with entry requirements for RAPs and promoting instructional practices and accessibility tools to make curricula fully accessible to students with disabilities.</p> <p>For instance, YouthBuild USA's STEMfolio, a learning app designed with UDL principles, facilitates the transition between pre-apprenticeships and apprenticeships. It allows participants to (1) demonstrate prerequisite knowledge and skills for apprenticeship programs, and (2) obtain credit for skills and knowledge they have achieved.</p>

Hall, T. E., Cohen, N., Vue, G., & Ganley, P. (2015). Addressing learning disabilities with UDL and technology: Strategic reader. *Learning Disability Quarterly*, 38(2), 72–83. <https://doi.org/10.1177/0731948714544375>

Introduction

Currently, there are nearly 25,000 Registered Apprenticeship programs (RAPs) operating in the United States.¹ These programs combine applied, on-the-job training with formal classroom instruction and provide skills training and career pathways to high-skill jobs for approximately 633,000 apprentices.² RAPs have been embraced by employers across a variety of high-demand sectors, including information technology, health care, logistics, manufacturing, and construction.

As illustrated in Exhibit 2, RAPs present an opportunity to fully integrate employers and their employees into the nation's education and training pipelines by engaging and supporting them, at their places of work, with employers as the primary trainers. By integrating learning into the workplace, RAPs enable the flexibility needed for workers to adapt to the increasing demands brought by technological change. Moreover, apprenticeships provide career pathway opportunities that are accessible to learners with varying educational levels. This increases the pool of available talent, which is a benefit for both employers and jobseekers. Over the last decade, RAPs have been championed by the public workforce, the education system, and employer partners as a sustainable strategy to address skill shortages and to develop pipelines of qualified talent and career ladders for employees.

Exhibit 2. Core Components of Registered Apprenticeship Programs



Adapted from the U.S. Department of Labor's *Building Registered Apprenticeship Programs: A Quick-Start Toolkit*

The AIM Initiative

Expanding apprenticeship opportunities is a key priority of the federal government—one that was reinforced by the 2017 [Presidential Executive Order Expanding Apprenticeships in America](#).³ The promise of apprenticeship is that it provides a structured pathway to skilled jobs that pay living wages for those who want to learn by doing. At a time of increasing wage inequality and a deep recession in the United States, it is more critical than ever for funders, policy makers, and RAP practitioners to consider how RAPs can be designed to be more inclusive of all job seekers.⁴ Ensuring that there are multiple equitable on-ramps to apprenticeship opportunities is part of a current dialogue as we collectively consider how the good jobs of the future will be accessible to everyone, including people with disabilities.

¹ RAPs were established through the National Apprenticeship Act of 1937, which instituted standards that safeguard the welfare of apprentices. The scope and purpose of the system, as well as the standards, policies, and procedures for programs, are outlined in Title 29, Part 29, of the Code of Federal Regulations (29 C.F.R. § 29). Title 29, Part 30 of the Code asserts that RAPs are equal opportunities and that discrimination based on race, color, religion, national origin, sex, sexual orientation, age (40 or older), genetic information, or disability is prohibited.

² According to the U.S. Department of Labor (2019), there were 24,788 active programs and 633,476 apprentices between October 1, 2018, and September 30, 2019.

³ While Executive Order No. 13801 references both RAPs and Industry Recognized Apprenticeships (IRAPs), this brief focuses on RAPs. See U.S. DOL (2012).

⁴ Guidance on targeted recruitment is specified in 29 C.F.R. § 30.8. Suggestions include recruiting from organizations and PA programs that serve underrepresented groups.

In support of these expansion efforts, the Office of Disability Employment Policy (ODEP) at the U.S. Department of Labor (U.S. DOL) sponsored the Apprenticeship Inclusion Models (AIM) initiative. The AIM initiative focused on learning how apprenticeship and pre-apprenticeship programs can optimize learning for and inclusion of people with disabilities. Specifically, the project sought to address the accessibility of apprenticeship and pre-apprenticeship programs' recruitment, assessment, mentoring, training, and instruction efforts, as well as their general approach to supportive services. In support of these objectives, the initiative has produced five briefs that provide information to support the scaling of inclusive apprenticeships. This brief focuses on how policies and practices can support PA programs that are inclusive of people with disabilities.

This Brief: Strengthening Pre-Apprenticeships for People with Disabilities

PA programs in the United States date back to the 1960s, when they were created to help facilitate racial integration within the construction industry's workforce.⁵ Today, they are used for a wide range of purposes, including serving as a general recruitment strategy for apprenticeship programs, preparing underrepresented groups for entry into apprenticeship, and helping expand apprenticeship into new industries by creating pools of qualified candidates.⁶ Some PA programs are specifically focused on serving people with disabilities.⁷

Like apprenticeships, PA programs blend classroom training with applied learning (e.g., work-based learning). More formally, the U.S. DOL has defined a quality PA program as one "designed to prepare individuals to enter and succeed in a Registered Apprenticeship program and [that] has a documented partnership with at least one, if not more, Registered Apprenticeship program(s)," and that includes classroom training, applied hands-on training, and support services to ensure participant success (see Exhibit 3).⁸

Multiple types of organizations operate PA programs, including community-based organizations, trade associations, unions, community colleges, and high schools. Recently, with the implementation of the Workforce Innovation and Opportunity Act (WIOA), Title I Youth programs and workforce boards have become more active in their administration of and partnership with PA programs; WIOA specifically includes PA as a form of work experience within the youth program.

⁵ See Roberts (1970) and Manpower Development and Training Act Hearings (1963).



⁶ See Conway, Gerber, and Helmer (2010); Oettinger and Hebbbar (2019); and Shaw, Gordon, Xing, and Carroll (2019).

⁷ For example, Able-Disabled Advocacy operates a PA and apprenticeship program that prioritizes reaching out to individuals with disabilities, veterans, and women (see <https://www.able2work.org/programs/pre-apprenticeship-program/>).

⁸ This is a shortened version of WIOA's pre-apprenticeship definition as described in the final WIOA regulations (Section 681.480) from 2012, as outlined in the U.S. DOL's (2012) Training and Employment Notice No. 13-12. Since the definition was created in 2012, it does not include reference to Industry Recognized Apprenticeship Programs, or IRAPs.

Exhibit 3: What is Pre-Apprenticeship?

USDOL defines a high-quality PA program as having five main components:

				
<p>Training curriculum (both classroom and applied) that is approved by RAP partners.</p>	<p>Meaningful hands-on training</p>	<p>Strategies that support long-term success, such as helping participants apply to RAPs.</p>	<p>Access to support services, such as adult basic education and math tutoring support.</p>	<p>Facilitated entry to RAPs, such as by making learning credits earned during the PA program count toward the apprenticeship.</p>

Source: https://wdr.doleta.gov/directives/attach/TEN/TEN_13-12_Acc.pdf

A Shared Model: Pre-Apprenticeship and Career and Technical Education

High school and community college career and technical education (CTE) classes share a core structure similar to that of RAPs and PA programs, blending academic classroom content and work-based and/or applied learning experiences. More specifically, high school CTE programs are defined in the Strengthening Career and Technical Education for the 21st Century Act of 2018 (Perkins V) as including rigorous academic content, relevant technical knowledge, and competency-based, work-based, or other applied learning experiences.⁹ As a result of this shared structure, many states are incorporating high school and college CTE classes into PA programs, which in turn are aligned with RAPs.¹⁰

In the remainder of this brief we identify policies, practices, and design elements that support PA programs—whether school-based or non-school-based—that are inclusive of people with disabilities. The brief seeks to answer two main questions: (1) Which policies in Perkins V and WIOA support the design of PA programs that serve people with disabilities? and (2) How, in practice, have PA programs designed their services to be inclusive of people with disabilities?

The next section describes how federal and state education and workforce policies (e.g., Perkins V and WIOA) support designing PA programs for people with disabilities. The following section of the brief presents PA program design considerations gathered from interviews with six PA programs. The final section offers a brief summary and a discussion of policy implications.

⁹ This definition is drawn from Section 3(5) of the Perkins V Act.

¹⁰ See Kremer and Zimmermann (2017) and Rice, Hudson, Foster, and Klein (2016).

Policy Supports for Pre-Apprenticeship Programs that Serve People with Disabilities

Many supports that high schools provide to students with disabilities are specified in students' Individualized Education Programs (IEPs) or 504 plans.¹¹ Moreover, as required by the Individuals with Disabilities Education Act (IDEA), beginning not later than when a child is 16, the IEP must include appropriate measurable postsecondary goals related to training, education, and employment, and specify the associated transition services needed to reach those goals.¹² In recent years, federal legislation governing education and workforce policy has included new provisions that can further support education and training program capacity for ensuring equal access by people with disabilities. In this section we highlight the provisions included in Perkins V and WIOA, as well as describe several state initiatives that are specifically focused on PA programs.

Perkins V

While previous versions of the Perkins Act supported people with disabilities and other disadvantaged groups, Perkins V (signed into law in 2018) expanded the stated purpose to include a specific focus on expanding employment opportunities for target populations, including people with disabilities (Exhibit 4). Further, to provide increased support for people with disabilities, Perkins V allows its funding to be used for:

- specific professional development activities—including training for educators—on how to provide instruction and academic support for students with disabilities;¹³ and
- professional development on the principles and applications of Universal Design for Learning (UDL), a framework that helps improve and optimize teaching and learning for all people based on evidence about how humans learn.¹⁴

Exhibit 4. The Purpose of Perkins V

“The purpose of this Act is to develop more fully the academic knowledge and technical and employability skills of secondary education students and postsecondary education students who elect to enroll in career and technical education programs and programs of study, by...increasing the employment opportunities for populations who are chronically unemployed or underemployed, including individuals with disabilities, individuals from economically disadvantaged families, out-of-workforce individuals, youth who are in, or have aged out of, the foster care system, and homeless individuals.” (Strengthening Career and Technical Education for the 21st Century Act of 2018 [P.L. 115–224])

¹¹ Example supports include audiology and speech–language services, or extra time to take tests. Generally, high schools in the United States identify the services and/or accommodations that a student with a disability needs through IEPs and 504 plans. An IEP focuses on specialized instruction needs, whereas a 504 plan focuses on accessibility requirements. IEPs are defined under the Every Student Succeeds Act of 2005 (ESSA) and the Individuals with Disabilities Education Act of 1990 (IDEA); 504 plans are created in accordance with Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against otherwise qualified individuals on the basis of disability. For more information, see Office for Civil Rights (2020).

¹² Section 1414(d) of IDEA (2004) specifies the components of an IEP.

¹³ The language describing professional development training to support the learning of students with disabilities is the same under ESSA and Perkins V.

¹⁴ See CAST (2018).

Perkins V identifies two defining qualities of UDL. Specifically, it utilizes a framework that:

- 1) provides flexibility in the way information is presented and the way students are engaged; and
- 2) reduces barriers to instruction and maintains high achievement and expectations for all students, including students with disabilities.¹⁵

The legislation also maintains that funds can be used for coordination with other education and training agencies, including career pathways and sector partnerships developed under WIOA and initiatives that provide students with transition-related services. Provisions in Perkins V apply to both secondary and postsecondary schools, thereby reaching both youth and adults. In 2019, approximately 62% of Perkins funds were allocated to secondary schools and 38% were allocated to postsecondary schools.¹⁶

The Implications of Perkins V for Accessible RAPs and PA Programs

As a result of the new provisions in Perkins V, schools and districts can now use Perkins funding to provide disability-related training for their staff members and to incorporate UDL practices into CTE classes and school-based PA programs. UDL has been demonstrated to provide learning options for diverse learner needs, including students with disabilities.¹⁷ Research has shown that, in a digital learning environment, UDL can improve test scores for students with learning disabilities.¹⁸

In practice, our interviews with PA program staff (discussed in detail in the next section) suggest that UDL has helped PA participants by providing them with alternative methodologies for learning. Generally, applying UDL at the program level shows promise to make occupations more widely accessible by creating alternative on-ramps for occupations like nursing and information security analysts, which are both occupations on U.S. DOL's list of apprenticeable occupations.

The planning guidance for Perkins V state plans underscores and supports state efforts to align workforce and education priorities and systems, including for people with disabilities. The guidance specifically calls for Perkins V state plans to be created in consultation with key CTE stakeholders, including representatives of state workforce boards and members and representatives of special populations (including people with disabilities).¹⁹ Thus, CTE administrators have the opportunity to collaboratively develop a working model of how PA programs and RAPs can specifically assist youth with disabilities in their transitions from high school to postsecondary education to careers.

¹⁵ UDL is defined in Section 3(54) of Perkins V. It is the same definition in ESSA, as amended in 2016. It is also defined in Title 20 of the U.S. Code, Section 1003.

¹⁶ See Perkins Collaborative Resource Network (2019).

¹⁷ See Meyer, Rose, and Gordon (2014).

¹⁸ See Hall, Cohen, Vue, and Ganley (2015). The gain for students with learning disabilities in the online learning environment was 10.4% from pre- to post-experience and was statistically significant. In contrast, students with learning disabilities in the offline learning environment experienced a 6.5% increase, but it was not statistically significant.

¹⁹ Section 122(c)(1) of Perkins V provides details on the requirements for stakeholders involved in the development of the state plan.

WIOA

WIOA, signed into law in 2014, includes numerous provisions related to expanding opportunities for people with disabilities and PA programs. Generally, this law requires states to strategically align their workforce services. It requires WIOA's six core programs to better assist all partner programs in serving individuals with barriers to employment, including those with disabilities.²⁰

Another significant provision of WIOA relates to the law's changes to supported employment and related services delivered through the Vocational Rehabilitation (VR) program. Under WIOA, the definition of supported employment (assistance with finding and maintaining employment) now includes competitive integrated employment and customized employment. Competitive integrated employment refers to a job for which a worker with disabilities has non-supervisor co-workers without disabilities. The work also has a wage that is commensurate with the prevailing wages that workers without disabilities earn for performing the same work. Customized employment is employment that both meets the specific abilities, talents, and interests of an individual with a disability and the needs of the employer.²¹

WIOA also eliminated uncompensated employment as an option for supported employment and set constraints on when participants with disabilities can be compensated for supported employment at less than the minimum wage.²² Other notable changes made by WIOA that are related to youth with disabilities and youth PA programs include:

- WIOA recognizes the significance of the transition of individuals with disabilities out of secondary schools due to the loss of school-provided supports (e.g., services prescribed in IEPs; the structure of the school day). As such, WIOA requires the provision of pre-employment transition services for youth with disabilities. These services include activities such as job exploration, work-based learning experiences, counseling on postsecondary opportunities, and training related to self-disclosure of a disability, among others. Pre-employment transition services are required to be customized to individual youth and are aimed at facilitating the transition to employment, education, or adult-serving programs for people with disabilities, such as VR.
- WIOA requires that 20% of Youth program funding that is spent to serve youth with barriers, including youth with disabilities, be used on paid or unpaid work experience that has an academic and an occupational component, such as a PA program.
- Provisions in WIOA designate YouthBuild as a PA program.²³ YouthBuild, authorized under Title I of WIOA, provides education, training, leadership development, and employment opportunities to disadvantaged youth, including out-of-school youth and youth with disabilities.²⁴

²⁰ WIOA's six core partners are the three Title I programs (Adult, Dislocated Worker, and Youth), the Adult Education and Family Literacy Act program, the Wagner-Peyser-funded Employment Service program, and the Vocational Rehabilitation program.

²¹ A more detailed definition of competitive integrated employment and customized employment can be found at 34 C.F.R. § 371.6.

²² See LEAD Center (2016).

²³ See YouthBuild (n.d.).

²⁴ A more detailed definition of YouthBuild can be found at 20 C.F.R. § 672.100.

In addition to specific pre-employment transition services for youth with disabilities, WIOA supports PA programs and RAPs, career pathways infrastructure, and provisions to ensure that these career pathways are open to everyone. WIOA defines career pathways to include apprenticeship and identifies PA as an allowable program component for youth services.²⁵ WIOA allows individual training accounts—the primary means used by the Adult, Dislocated Worker, and Youth programs to fund classroom-type training—to be used to pay for RAPs. Similarly, WIOA funds can be used to support the on-the-job training component of RAPs.²⁶ Additionally, Section 188 of WIOA prohibits discrimination and specifies that services provided through WIOA must be inclusive to all. Consequently, WIOA services should use physical space and technologies—including websites, online systems and courses, and applications—that are accessible to individuals with disabilities and consistent with current accessibility standards, such as the World Wide Web Consortium’s Web Content Accessibility Guidelines.²⁷

WIOA Implications for Accessible RAP and PA Programs and Pathway Building

Together, the aspects of WIOA described above provide both policy and funding support for creating a PA-to-RAP pipeline that is inclusive of all individuals. Each component of a RAP, from the on-the-job training portion to the classroom training component, can be supported with WIOA dollars, and youth PA programs are actively supported in WIOA. These latter programs serve as a critical strategy for making RAPs more accessible because they specialize in recruiting and preparing priority youth populations (e.g., justice-involved youth; youth with disabilities) for RAPs.

Much like Perkins V plans, WIOA state plans provide an opportunity for strategic alignment between core and required partner programs. Rather than simply developing unified plans that cover all WIOA core programs, states can prepare and submit combined plans that include other partner programs, including the Perkins CTE program.²⁸ Because Perkins V allows these combined WIOA plans to meet the Perkins state plan requirement, a state that submits a combined WIOA state plan that includes the Perkins program does not have to submit a separate Perkins state plan.

²⁵ WIOA’s definition of career pathways is a combination of rigorous and high-quality education, training, and other services that (1) aligns with the skill needs of industries in the economy of the state or regional economy involved; (2) prepares individuals to be successful in any of a full range of secondary or postsecondary education options, including registered apprenticeships; (3) includes counseling to support an individual in achieving their education and career goals; (4) includes, as appropriate, education offered concurrently with and in the same context as workforce preparation activities and training for a specific occupation or occupational cluster; (5) organizes education, training, and other services to meet the particular needs of an individual in a manner that accelerates their educational and career advancement to the extent practicable; (6) enables an individual to attain a secondary school diploma or its recognized equivalent as well as at least one recognized postsecondary credential; and (7) helps an individual enter or advance within a specific occupation or occupational cluster. It is specified in 29 U.S. Code § 3102 Definitions (<https://www.law.cornell.edu/uscode/text/29/3102>).

²⁶ See ApprenticeshipUSA (n.d.).

²⁷ See Partnership on Employment & Accessible Technology (PEAT) (n.d.).

²⁸ Core programs are the Title I, II, III, and IV programs; other required partners are entities responsible for administering programs and activities related to Perkins V, the Trade Act of 1974, and others specified in WIOA, Section 121(b)(1)(B).

State Initiatives to Develop Inclusive PA Programs

Several states have created initiatives to support the development of PA programs that serve the broader goals of both WIOA and Perkins V. Exhibit 5 highlights the initiatives of four of these states. Although none have specific provisions related to people with disabilities, two of them (those in California and Washington State) have a focus on recruiting and serving groups underrepresented in apprenticeships, such as people with disabilities. In the other two states (Kentucky and Wisconsin), the initiatives are associated with school districts and thus include an emphasis on being open to all students.

These state initiatives illustrate two general approaches to PA program design. The first approach involves a direct investment in both RAPs and PA programs through grant funding, with PA programs serving to recruit and prepare applicants for apprenticeships. In this model (utilized by California and Washington State) PA programs engage in targeted recruitment with the goal of creating a pipeline of qualified candidates for RAPs in new occupations and/or recruiting apprentices from underrepresented populations.²⁹ For example, the California Apprenticeship Initiative includes funding for PA programs that connect to RAPs and help diversify the pool of applicants prepared to enter RAPs.





The second approach is built on secondary school CTE programs, which are common across the United States. Approximately 81% of high school graduates in 2013 earned at least one CTE credit and 19% were concentrators—students who specialized in an occupational area. This approach (taken by Kentucky and Wisconsin) involves industry partnering with local high schools and school districts to better align high school CTE programs with apprenticeships through PA programs. For example, the Tech Ready Apprentices for Careers in Kentucky (TRACK) initiative is creating pathways to apprenticeship by incorporating existing secondary school CTE curricula into PA programs and youth apprenticeships, which are aligned with RAPs.³⁰ The creation of each pathway is a joint effort between local stakeholders and state agencies, with local programs developed by employers and schools. The state provides developmental support, such as consultation on labor law questions raised by employers.

The Kentucky Department of Education also provides an incentive for schools to create the programs. As part of the state's education accountability system, schools are measured on the percentage of their students who are transition-ready, and the state has included completion of a PA program as a transition-ready indicator. As such, schools that create PA programs provide their students with more options for demonstrating they are ready to transition.

²⁹ Historically, apprenticeships have been concentrated in the construction trades and have enrolled mostly men.

³⁰ In this brief, youth apprenticeships are apprenticeships that enroll high school students.

Exhibit 5. State Sponsored Pre-Apprenticeship Initiatives

State	Initiative	Description	Year Established
California 	<u>California Apprenticeship Initiative (CAI)</u>	<p>Expands apprenticeship into industries where it is uncommon and targets underrepresented populations in apprenticeship and PA by providing grant funding to community colleges and school districts.</p>	2015
Kentucky 	<u>Tech Ready Apprentices for Careers in Kentucky (TRACK)</u>	<p>Aligns secondary school PA programs and youth apprenticeship programs with RAPs. PA programs consist of CTE classes and culminate in an industry certification. Students who successfully complete a PA program are guaranteed an interview for a RAP.</p>	2013
Washington 	<u>Pre-Apprenticeship & Supportive Services (PASS) Program</u>	<p>Creates diversity in the highway construction workforce by providing grant funding to organizations that will provide supportive services and PA programs for women, members of underrepresented groups, and other disadvantaged individuals.</p>	2015
Wisconsin 	<p>Wisconsin registered <u>pre-apprenticeship</u> and <u>youth apprenticeship</u></p>	<p>Provides a pathway to register PA programs that meet the quality standards defined by U.S. DOL, including having linkages to RAPs.</p> <p>Supports youth apprenticeships by providing funds for local consortia (including school districts) to create and operate them.</p>	2015 (PA) 1999 (youth apprenticeship)

Designing Inclusive PA Programs

The fundamental purpose of PA programs is to facilitate connections to apprenticeship opportunities. This is particularly important for individuals who have limited access to RAPs. As described in Exhibit 3, PA programs provide this linkage by assisting potential apprentices with classroom and hands-on training, support services, and facilitated entry into a RAP. In practice, many PA programs have a long-standing tradition of designing programming that engages and accommodates diverse learners. So, despite a dearth of PA programs specifically targeting individuals with disabilities, we uncovered several examples of PA programs that are currently (knowingly) supporting people with disabilities as part of a broader integrated approach. These programs reported that, by designing their programs to optimize learning for everyone, they were able to effectively support people with various kinds of disabilities, both disclosed and undisclosed.

This section is based on six interviews conducted with staff in PA programs—many of which serve individuals with disabilities—and a literature review on best practices in PA programs and best practices for inclusive design in work-based learning.

Classroom and Hands-On Training

Both our interviews and literature review indicated the capacity for UDL to make programs more inclusive. As described earlier, research on UDL has demonstrated that it improves test scores for students with learning disabilities and provides learning options for diverse learner needs, including students with disabilities. It has also been used as a framework to make PA programs more accessible. For example, one YouthBuild PA program manager reported that he incorporated UDL principles into his program after participating in a UDL training course. Specifically, he used multiple approaches to explain concepts (e.g., lecture style; small-group peer learning; hands-on demonstrations). After doing so, he explained, his students became “comfortable in the classroom and open to learning....I think what [UDL] does is, it gives [students] the feeling of empowerment.” He also reported improvement in literacy and numeracy gains among his students. Prior to infusing UDL principles, approximately 25% of his students demonstrated literacy and numeracy gains; in a later cohort of students who experienced UDL, 46% demonstrated literacy and numeracy gains.³¹

In another example, a PA program reported using UDL principles to design an app that tracks the competencies learned during the program. It includes features designed for universal usage, whether the student has a disability, a literacy barrier, or even a simple learning style preference. The app's multiple utilities include a text help toolbar with built-in read-aloud translation and dictionary functions, speech-to-text voice inputs, and closed captioning for all videos, including subtitles in English with auto-translation available for additional languages.³²

³¹ See YouthBuild (2018).

³² The app is called IMTFolio and was developed by CAST. CAST is partnering with Jobs for the Future and Wisconsin Regional Training Partnership to pilot IMTFolio within the Industrial Maintenance Technician Registered Apprenticeship pathway.

Research has also demonstrated the importance of universally accessible formats for facilitating learning for students with disabilities. A review of studies found that universally accessible formats resulted in increased comprehension when compared with unenhanced textbooks.³³ Similarly, research has shown that students with learning disabilities experienced enhanced learning when using computer-adaptive technology (versus not).³⁴

High School PA Programs

High school-based PA programs have an added layer of support because students with disabilities have IEPs or 504 plans. These plans are student-centered, and a student's supports follow them if they enroll in a school-based PA program. Additionally, these PA programs are often connected to larger regional or state career pathway efforts, which are funded by state funds or local taxes or bond measures. Our interviews and literature review suggest the following specific staff training strategies for helping make PA programs more inclusive:

- **Train program staff, parents, and students on workplace accommodations, self-disclosure, and their rights and responsibilities in the workplace.** A study of Wisconsin's Youth Apprenticeship initiative found that students with disabilities received more support services in school than on the work site. The study concluded that program staff "need more information, training, and assistance in developing realistic supports and accommodations for students with disabilities in their programs." Moreover, the study recognized the importance of staff engaging students in discussions about the pros and cons of self-disclosure of a disability and of requesting accommodations.³⁵ Such training for students could be supported through the pre-employment transition services provided by the VR program.³⁶ ODEP has developed a helpful [guidance document](#) for students and parents that explains these topics in detail. The National Collaborative on Workforce and Disability for Youth has prepared a [guidebook for youth](#) with disabilities and an accompanying [guidebook for parents](#) related to these same topics.³⁷ The [Job Accommodation Network](#) is a source for guidance on workplace accommodations and disability employment issues.
- **Train educators on UDL practices that reduce barriers to instruction and can be supported by Perkins V.** As described above, UDL has been demonstrated to make education more accessible for students with disabilities.

³³ See Anderson and Anderson (2008).

³⁴ See Twyman and Tindal (2006).

³⁵ See Mooney and Scholl (2004).

³⁶ This is closely related to self-advocacy skills, which is one of the five pre-ETS (employment transition service) activities.

³⁷ See Curry (2018).

Access to Support Services & Promoting Long-Term Success

All the PA programs we spoke to provide individualized supports to help participants complete their programs. When interview respondents were asked about specific supports that were helpful to participants with disabilities, several strategies emerged:

- **Establish effective workforce development partnerships with programs such as WIOA's Adult, Youth, and VR programs.** Taking this approach has made additional supports available to PA program participants. For example, one respondent explained how his PA program established partnerships with his local WIOA Title I Adult and Youth programs, as well as the state's VR program. As a result of these partnerships, PA program participants were assessed for eligibility for the Adult, Youth, and VR programs during the program enrollment process. If eligible for any of these latter programs, PA participants were able to receive supports such as assistive technology and job-site assessments from the VR program or supportive services from either the Adult or Youth program. Research also indicates that partnerships with organizations enhance participant retention when the partner agency program staff can relate well to youth participants.³⁸ Another study demonstrated that a program that facilitated collaboration between teachers and VR counselors and that increased community work experiences (via partnerships with local education and business groups) increased transition opportunities and paid work experience for youth with disabilities.³⁹
- **Provide participants with targeted support services.** Multiple respondents mentioned the importance of ongoing, one-on-one case management to identify barriers and address them as needed. For example, one program asks participants early on whether they need extra time to complete the industry certification exam, and it provides guidance and support in submitting the request. Several programs have emphasized creating an individualized learning environment for all students, which might include individualized coaching activities such as interview preparation or extra tutoring.
- **Train staff to support the learning and workplace experiences of people with disabilities.** When students shift from a school setting to the workplace, they may need support in deciding whether to seek accommodation in the workplace. Staff can be trained to understand self-disclosure of a disability, which occurs when an employee is seeking accommodation for the disability.⁴⁰ More generally, program staff can be trained on which support services are available from partner agencies (e.g., services available from VR or a training partner). Such trainings could be paid for with Perkins V funding, which can be used to train staff to support students with disabilities.

³⁸ See Gordon and Ullrich (2017).

³⁹ See Molfenter, Hartman, Neugart, and Webb (2017).

⁴⁰ For more information on self-disclosure and self-identification, see DePreitas (2015).

Facilitated Entry to Registered Apprenticeship Programs

A key characteristic of quality PA programs is that they facilitate entry to RAPs. Facilitation includes a broad array of activities that give PA candidates an advantage when it comes to being selected for a program. Activities can include helping PA candidates acquire skills and knowledge that make them competitive in the application process. These activities may include things like RAPs hosting work-based learning for PAs or offering mock interviews. In some cases, PA programs have been able to arrange for credit for prior learning upon admittance to a RAP or have arranged for preference or priority during the application process.

One example of facilitating entry by addressing the RAP entrance requirements is a PA program we interviewed that provides an on-ramp for lower-skill incumbent workers looking to upskill into higher-skill work by way of an internal RAP pathway. The RAP was concerned that workers with disclosed and undisclosed learning disabilities, and workers with other barriers, would not advance into the apprenticeship because they were unable to demonstrate entry-level requirements using traditional assessment methods. As a result, the PA program and RAP deliberately infused a UDL framework for the design of the PA program and the RAP entrance assessment, and they engaged UDL experts to help them design a tool to track and measure the pre-apprentices' progress. The result was an app-based tool that allows pre-apprentices of all learning styles to measure and track their acquisition of competencies. As pre-apprentices progress through the PA program, they can demonstrate to the RAP that they (1) are ready to start the apprenticeship program, and (2) in certain cases deserve credit for skills and knowledge that they have already achieved.

Another instance we encountered of facilitating entry to apprenticeship for people with disabilities involved creating a PA program that links directly to a RAP and that employs staff knowledgeable about working with people with disabilities. Critical staff knowledge includes knowing how to engage participants in a discussion about self-disclosure and an understanding of how to help address their needs. This PA program has focused on three target populations—veterans, women, and people with disabilities—and is designed to align directly with the RAP. PA participants receive training in basic IT support to prepare them for entry into an IT apprenticeship. Because the program was developed by an organization with deep experience serving people with disabilities, program staff work to ensure each participant has what they need to be successful. These supports include providing assistance to participants who are deciding whether to self-disclose a disability to an employer, seeking additional time to complete a certification test, and obtaining additional tutoring. Having well-trained staff is critical to enable these conversations and to identify needed supports. As one respondent explained, it is important to have staff who can make people feel comfortable about disclosing they have a disability and talking about what they need.

Secondary School Efforts to Align with RAPs

Several states are engaged in efforts to align high school CTE requirements and programs (including PA programs) with RAPs. A report profiling six such states (Connecticut, Florida, Kentucky, North Carolina, Rhode Island, and Washington) found that schools were pursuing several strategies to better align CTE with RAPs.⁴¹ These include:

- **Legislation or policies that support linkages between secondary school CTE programs and RAPs.** For example, Rhode Island passed legislation that permits schools to provide apprenticeship classroom training (subject to approval by the state's Department of Labor and Training). The training can be applied toward a state-certified apprenticeship program.⁴² Additionally, as described earlier, Kentucky's Department of Education incentivized schools to create PA programs through their school district accountability systems. All schools have to show that their students are transition-ready, and the state includes completion of a PA program as a transition-ready indicator. So, schools that create PA programs provide their students with more options for demonstrating they are transition-ready. Additionally, the state guidance for creating PA programs includes steps for aligning PA programs with RAPs. (Appendix A provides more detail about Kentucky's approach to school-based PA programs.)
- **Coordination of program development at the regional level.** States have used this strategy by engaging CTE and RAP staff to market programs to employers and assist with program start-up.
- **Development of tools for supporting program alignment.** In particular, states have created tools to support the dual goal of meeting high school graduation requirements and entry requirements for a RAP.

Conclusion and Policy Implications

As described in this brief, PA programs are an effective way to concurrently achieve targeted recruitment and prepare participants for entry into RAPs. To make PA programs more accessible for people with disabilities, we recommend the strategies listed below. These strategies were identified through interviews and the literature review conducted for this brief.

Provisions in both Perkins V and WIOA complement these suggested strategies for designing effective and inclusive PA programs and are referenced accordingly. Broadly speaking, Perkins V incorporates a definition of UDL and supports training on UDL practices that reduce barriers to instruction. Similarly, WIOA includes provisions that WIOA services must be inclusive to everyone, and it strongly emphasizes support for PA and cross-agency partnerships.

⁴¹ See Rice, Hudson, Foster, and Klein (2016).

⁴² See Rhode Island General Laws, Title 28, Section 28-45-18.

In particular, we recommend that PA programs:

- **Incorporate UDL practices into program design.** This approach supports making educational content suitable for access and use by all students, including students with disabilities. For example, educational content should be provided in multiple formats (e.g., text; illustrations). As described earlier, research on UDL has demonstrated that this approach supports efforts to improve test scores for students with learning disabilities and enhances learning options for diverse learner needs, including students with disabilities. Respondents identified UDL as a key way to help PA programs support accessibility. Perkins V supports staff professional development on the principles and applications of UDL.
- **Make educational content accessible to individuals with disabilities and consistent with accessibility standards,** such as the World Wide Web Consortium’s Web Content Accessibility Guidelines. This includes PA program applications and other program-related information, such as location information and partner agency contact information. This practice drives equal access to program information and resources (e.g., program applications) for people with disabilities. Furthermore, Section 188 of WIOA requires that workforce services at American Job Centers be accessible to people with disabilities.
- **Enhance access to support services for participants with disabilities by establishing partnerships with programs, such as WIOA’s Adult, Youth, or VR programs.** Interview respondents identified utilization of these partnerships as an important strategy for supporting participants. For example, PA programs established partnerships with local WIOA Title I Adult and Youth programs and state VR programs. Both Perkins V and WIOA support the forging of partnerships and the coordination of services between workforce and education programs that provide services to people with disabilities. Perkins V funds can support school coordination among service systems for career pathways and sector partnerships developed under WIOA, and WIOA supports coordination between VR and other workforce programs.
- **Facilitate the transition to apprenticeships at the individual level, program level, and systemic level.** Many students with disabilities are accustomed to receiving in-school support services in K–12, as detailed in their IEP or 504 plans, but in a work setting the process for requesting accommodations differs. Therefore, to help facilitate the transition to a work environment, program staff, students, and parents should receive information on workplace accommodations, self-disclosure, and rights and responsibilities in the workplace.

Both Perkins V and WIOA foster this type of training. Staff training on how to support people with disabilities (such as self-advocacy during a school-based apprenticeship) can tap Perkins V funding. WIOA pre-employment transition services are available to youth with disabilities and include instruction in self-advocacy to help students learn about workplace accommodations, self-disclosure, and their rights and responsibilities in the workplace.

At the program level, PA programs can effectively facilitate participant entry into RAPs by simultaneously aligning their curricula with the entry requirements of RAPs and creating tools and promoting teaching practices that make their curricula more accessible to students with disabilities. Accessibility can range from using textbooks that are viewable on a computer, tablet, or mobile device to designing a learning app using UDL principles. For example, as described above, one PA program designed a learning app that allows PA participants of all learning styles to measure and track their acquisition of competencies, and thus demonstrate to the RAP that they are ready to start the

apprenticeship program and deserve credit for skills and knowledge that they have already achieved.

At the system level, state partners should explore building linkages between PA programs and RAPs. Both Perkins V and WIOA state plans provide an opportunity for strategic systemic alignment between programs. States can submit combined plans that meet both Perkins V and WIOA requirements. The planning process can be used to align PA programs and RAPs, especially in cases where PA programs are part of the secondary school system. Specifically, the planning process can assist youth with disabilities in the transition from high school because Perkins V state plans must be created in consultation with special populations, including people with disabilities. States can also incentivize organizations to create PA programs aligned with RAPs through grant programs and state policies that reward schools for creating PA program options for students.

These strategies can make PA programs more inclusive and RAPs more accessible for people with disabilities. In turn, this practice enables employers to access a wider pool of talent and helps job

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Appendix A

seekers with disabilities to attain needed technical training, employment, and financial security.

Profile of Tech Ready Apprentices for Careers in Kentucky (TRACK): A School-Based Pre-Apprenticeship and Youth Apprenticeship Model⁴³





The Tech Ready Apprentices for Careers in Kentucky (TRACK) initiative illustrates how schools are aligning their CTE curricula with Registered Apprenticeship programs (RAPs). The initiative was created in 2013 through a partnership between the Kentucky Department of Education's Office of Career and Technical Education and the Kentucky Labor Cabinet's Apprenticeship Office in order to provide high school students with more education opportunities. The initiative creates pathways to apprenticeship by aligning secondary school career and technical education (CTE) curricula with RAPs through Pre-Apprenticeship (PA) programs and youth apprenticeships.

In both options, employers with a RAP work with schools to create a curriculum of classes (based on existing CTE classes) that aligns with their RAP. In the PA program, which includes CTE classes and an industry certification obtained by passing a test, students who successfully complete the program are guaranteed an interview with the employer for the RAP. In the youth apprenticeship, students are selected by employers (after an application and interview phase) to participate, and the program combines CTE classes and work experience. Students who successfully complete the youth apprenticeship are guaranteed an interview for a RAP.

Exhibit A-1 depicts how TRACK programs are developed locally by employers and schools with developmental support from the state.

⁴³ In 2018, the Office of Apprenticeship moved from the Kentucky Labor Cabinet to the Kentucky Education and Workforce Development Cabinet. See Kentucky Education and Workforce Development Cabinet (2018).

Exhibit A-1. Track initiative Partner roles

Partner	Role
 School Districts	Schools create TRACK pathways to meet local employer needs and create career pathways for students. This is one way schools can meet the “transition ready” accountability standard required by Kentucky legislation and managed by the Kentucky Department of Education. School leadership and CTE instructors conduct local outreach to identify new employers and existing cooperative education employers that are interested in the PA and/or youth apprenticeship options. School staff work with interested employers to create a curriculum based on existing CTE classes.
 Employer	Employers participate to meet their workforce needs and create training opportunities for the community. Employer partners collaborate with schools to select CTE coursework that aligns with their workforce needs. Employers interview successful PA completers. In the case of youth apprenticeships they interview applicants, select participants, and provide work-based learning experiences. Employers sponsor the RAPs that are aligned to the pre-apprenticeship or youth apprenticeship.
 State Office of CTE and Office of Apprenticeship	The state provides support to TRACK program development by: (1) connecting districts with TRACK-participating employers willing to share their experiences with other employers that have questions about the program; (2) clarifying state laws for employers—for example, the state created a flyer for employers to explain labor laws that apply to employees under 18 years of age; and (3) creating program implementation guidance, such as details of the student enrollment process.
 Other Partners	In some instances, a temporary staffing agency is brought in to serve as the employer of record, which allows students under 18 years of age to be covered under the agency’s usual liability insurance.

TRACK Implementation Resources

[TRACK Process Document](#). A document describing the enrollment steps for the PA program and youth apprenticeship program.

[Kentucky Labor Law Summary](#). A one-pager created to inform employers about employing individuals who are 14–17 years of age.

[TRACK Youth Apprenticeship Agreement](#). Used to establish responsibilities of the employer, student, and school.