*State boards can explore many avenues for work-based learning to prep high school students for good jobs.*

# The Critical Role of Apprenticeship Programs

**Wanda Monthey**

While their authority for program approval may vary from state to state, state boards of education should ensure that the secondary school CTE programs are part of a continuum that prepares students for further education, training, and the workplace. By expanding apprenticeship programs, state boards can give students opportunities to become successful adults earning family-sustaining wages.

*The Atlantic* reported in 2014 that fewer than 5 percent of young people in the United States were training as apprentices, with most in construction trades, compared with 60 percent in Germany.[1] But U.S. participation is growing. The U.S. Department of Labor reports 56 percent growth in apprenticeships since 2013, amounting to 585,000 participants in fiscal year 2018, with 23,400 registered programs.[2]

State policymakers' interest has also increased. According to the National Conference of State Legislatures, 7 states passed 11 related laws in 2016, 14 states passed 20 laws in 2017, and 19 states passed 29 laws in 2018.[3] Most focused on the following:

- establishing new programs or new requirements for existing programs;
- new funding in the form of tax credits or grants to employers to incentivize hiring of apprentices or scholarship funds to students who are participating in an apprenticeship;
- increasing awareness of available programs;
- allowing apprenticeships to fulfill credits toward graduation and to ensure that credits transfer; and
- expanding programs to prevent discrimination and ensure diversity among apprentice programs.

Program design will vary to fit local contexts. A study by Advance CTE for the U.S. Department of Education (ED) studied eight secondary apprenticeship programs across the country and found that they all used different strategies to address local skill gaps. Yet the programs faced common challenges that state policy can address: leveraging funding, barriers to equitable participation, and historically disconnected systems with limited ability to collect and share data on outcomes.[4] The study concluded that "with the right partners, policies, programmatic elements, and support, apprenticeships programs can enrich CTE programs" while also addressing state and local skill gaps that employers face.

The ED report identified five components of apprenticeships: 1) employer involvement; 2) on-the-job training; 3) related technical instruction; 4) paid work experience; and 5) award of portable, nationally recognized industry credentials. In addition to registered apprenticeships, there are youth apprenticeships, which are sometimes registered and may include many of the same components, that are designed specifically for students aged 16 to 18 and are connected to an adult apprenticeship. There are also preapprenticeship programs or strategies, designed to prepare individuals for entry into a registered apprenticeship program.

## Registered Apprenticeships

Apprenticeships combine classroom instruction and on-the-job learning. Registered programs are developed by or with employers, postsecondary institutions, or intermediary organizations, with approval of a state's

apprenticeship office or the U.S. Department of Labor's Office of Apprenticeship.[5] Registered apprenticeships can offer several benefits to high school students:

- formal, structured training and education opportunities;
- a career path that includes credits that can be linked to local associate's or bachelor's degree programs;
- a certificate of completion from the Apprenticeship Registration Agency;
- certification that is nationally recognized and tied to registered apprenticeship standards;
- participation in quality education and training; and
- "earning while learning."

While there are many high-quality registered programs, states and districts can also provide students and adults with other paths to apprenticeships. For example, they can develop new ones with business and industry partners, who are likely to realize many benefits: highly skilled employees, reduced turnover, increased productivity, and lower recruitment costs. The U.S. Department of Labor cites data suggesting that employers see $1.47 in increased productivity, reduced waste, and greater front-line innovation from every dollar spent on apprenticeships.

Registered apprenticeship programs fill the needs of an increasing number of industry sectors. Apprenticeship programs are now offered in many more occupations than was once common—in information technology, hospitality, health careers, and advanced manufacturing, including emerging in-demand areas—while traditional apprenticeship areas such as construction have continued.

In the past, an approved program required at least 144 classroom hours and generally 2,000 hours on the job, and this is still one model. As with other education reforms that are moving toward competency-based systems and away from time-based ones, competency-based registered apprenticeships must be a minimum length of time but do not have to include 2,000 hours on the job. Completion depends on achieving the competencies, which could take more or less time, depending on the pace at which the student learns.

The Labor Department now approves programs that are competency based or a hybrid of competency and time based. A competency-based or hybrid program must include the same competencies as a traditional time-based program. Regardless of format, students need to demonstrate proficiency in order to complete the program and receive certification.

## Youth Apprenticeships

Youth apprenticeship programs in high school give students a wide range of choices after high school that include embarking on career pathways, moving directly into industry, attending postsecondary education, and joining adult apprenticeships. Programs begin in high school, and a high-quality program articulates with postsecondary programs. Students gain academic and technical skills in their high schools and career/technical centers and gain work experience with an employer. In many cases, students leave high school with college credits through dual enrollment and industry-recognized credentials and certification. Students may go into a preapprenticeship program or right into a registered apprenticeship program if they are eligible.

The National Governors Association offers four criteria for a quality youth apprenticeship program:

- paid on-the-job learning under the supervision of skilled employee mentors;
- related classroom instruction;
- ongoing assessment against established skills and competency standards; and
- culmination in a portable, industry-recognized credential and postsecondary credit.[6]

Policymakers, educators, and employers have voiced concern about the impact of labor laws on students in the workplace. In January 2017, the U.S. Departments of Education and Labor sent a joint letter to encourage states to develop youth apprenticeship programs for secondary students who are 16 or older. The letter also addresses concerns about hazardous occupations and the Fair Labor Standards Act.[7]

## Preapprenticeships

Preapprenticeship programs, in general, are more advanced than youth apprenticeship

**Apprenticeship programs are now offered in many more occupations than was once common while traditional apprenticeship areas have continued.**

**Box 1. Youth and Preapprenticeship Programs in STEM**

Six states' education agencies will be designing and implementing preapprenticeship programs over the next three years.

The **Kentucky** STEM Apprenticeship Program will give high school CTE students in the Perry County School District and Hazard Independent Schools the opportunity to enroll in a Pathways in Technology Early College High School. With Hazard Community and Technical College, the Eastern Kentucky Concentrated Employment Program, and other partners, the project will incorporate paid competency-based apprenticeships for students in grades 11 and 12 to prepare them for careers in health care or computer science.

**Maryland** will expand its pilot Apprenticeship Maryland to a statewide program. Through the Apprenticeship Program Advisory Committee, the Maryland State Department of Education will continue its partnership with the Maryland Higher Education Commission, registered apprenticeship sponsors, and others to transition high school students to postsecondary education and employment in STEM fields, including computer science.

The **Nebraska** Pathways to STEM Apprenticeship project will develop a competency-based computer science registered apprenticeship in rural northeast Nebraska. It will build on the region's Pathways 2 Tomorrow program, an eight-school district partnership with rural northeast Nebraska high schools, Northeast Community College, and Educational Service Unit 2 that offers CTE course sequences in information technology and healthcare. The project will focus on opportunities for rural English learners in the region's high schools.

The **Oregon** Pathways to Apprenticeship in Computer Science project will develop a competency-based apprenticeship pathway for high school students enrolled in computer science programs of study. The project will include paid work experiences with Apprenti, a registered apprenticeship. The project will pilot online delivery of curriculum, mentorship, and work-based learning with rural school districts in two regions.

The **Rhode Island** Youth Apprenticeship Program will develop two competency-based programs, a Cyber-Security Analyst Apprenticeship Program and Data Analyst Apprenticeship Program. Both will prepare high school students for entry-level cybersecurity and data sciences roles at CVS Health and other Rhode Island employers. Apprentices will complete a paid internship in the summer before their senior year, receive mentor support, earn postsecondary credit, and attain industry-valued credentials before graduation.

Preparing Today's Students for Tomorrow's **Tennessee** will expand a work-based learning initiative in Hamilton County to create a pilot competency-based machine operator apprenticeship. Lessons learned from the pilot will be used to develop an apprenticeship curriculum that aligns with existing high school CTE programs of study in advanced manufacturing, computer science, and health care.

programs and give secondary and postsecondary students, out-of-school youth (16-24 and not in school or working), and adults the skills necessary to move into a registered program. Instruction may vary in length and scope and may include basic skills training, academic skills remediation, or an introduction to the industry. Completers may be accorded preferential consideration for entry into a registered apprenticeship program, apply time served or credits earned toward fulfilling program requirements, or both.

The Labor and ED guidance identifies the elements of a preapprenticeship program:

- prepares individuals to enter and succeed in a registered apprenticeship program;
- addresses the needs of students, employers, sponsors, and school districts;
- offers courses as part of the program in high school that are approved by a registered program and count toward high school graduation;
- facilitates participation in on-the-job learning as early as age 16 that can count as entry into the registered program;
- presents opportunities to earn industry-recognized credentials and certifications;
- applies to a registered program upon graduation or leading up to graduation; and
- awards postsecondary credit based on articulation agreements between local school districts, postsecondary institutions, and registered programs.[8]

The Education Department awarded funds to six states in 2018 for preapprenticeship programs in science, technology, engineering, and mathematics (STEM) fields, including computer science, to expand and facilitate the transition of high school CTE students to postsecondary education and employment (box 1).

## What Can State Boards Do?

High school students and others can participate in solid apprenticeship programs that set them on the path to good careers. But such programs require state-level leadership. Even if the state board does not directly authorize funds to local districts, the board may be approving career and technical programs. State boards are thus uniquely positioned to support and encourage new programs at all levels of apprenticeship, including through development of their state plans to implement the reauthorized Perkins Act.

State boards ought to share regulatory language and strategies with other boards. For example, a Virginia law passed in 2018 requires the board to review and revise competencies for CTE programs and ensure their alignment with existing industry and professional standard certifications. The law requires local school boards to notify students and parents of available internships, externships, apprenticeships, credentialing, certification, licensure, and other work-based learning programs. In **Georgia**, the state board in 2015 approved regulations for apprenticeship coordinators in high schools that set out criteria for local boards to meet in order to receive state funds.[9]

Funds for apprenticeship programs are also available through the Workforce Innovation and Opportunity Act (WIOA), which requires that at least 75 percent of state and local youth funding be used for out-of-school youth. If the state board has responsibility for youth who are not in school or working, WIOA funding may support their participation in apprenticeships.

Before beginning to review state and local apprenticeship programs and their accompanying statutes and regulations, state boards need to determine which agency approves such programs in their state. Twenty-five states and the District of Columbia and Guam have state apprenticeship offices. Sometimes workforce boards have responsibility for apprenticeships (Maryland), and in other states community and technical colleges administer them (South Carolina and North Carolina). Other states rely on the national apprenticeship system administered by the Labor Department.

State boards will need to review their state and local resources, including identifying which employers are willing to design local and state programs. Linking with existing programs will be much easier than trying to develop new ones.

There may be multiple apprenticeship models across the state. An experienced employer may select one student to enter their registered apprenticeship, while youth apprenticeships may be more prevalent elsewhere.

**State boards are uniquely positioned to support and encourage new programs at all levels of apprenticeship.**

**Box 2. Apprenticeships in Switzerland**

Swiss companies implement a robust apprenticeship programs for high school students that will continue beyond high school. In Switzerland, two-thirds of graduates from compulsory education choose to enter apprenticeship programs lasting three to four years. Apprentices attend classes and work for an employer. They are paid and earn college credits; in some cases, apprenticed students have earned doctorates.

The United States signed a memorandum of understanding with Switzerland through the Swiss Embassy to jointly develop and implement apprenticeship programs for high school and community college students. For example, Swiss company Zurich Insurance America provides registered apprenticeships in Chicago, Mikron in Colorado, Daetwyler in North Carolina, and Feintool in Ohio.

With their diverse membership and representation across the regions of their states, state boards can devise creative options, such as the preapprenticeship program coordinated by the Connecticut Center for Advanced Technology, which prepares high school students for entry-level jobs in manufacturing while paying them as part-time interns.[10] The center increased access by offering instruction online. State boards can also learn from international approaches to apprenticeship (box 2).

There are successful examples in every state (including in West Virginia, for example, whose efforts are detailed on page 35). Michigan requires apprenticeship and internship programs to be part of school improvement plans and Oklahoma requires schools to include apprenticeship programs in student's Individual Career and Academic Plan (ICAP) advising plans.

State board colleagues across the country who have led career education work are ready and willing to share their strategies, as well as sharing what did not work. State leaders who are interested in expanding career pathways that include on-the-job learning for high school students should do the following:

- provide funding and implement policies that allow work-based learning to occur in high schools;
- establish quality standards, program approval processes, and data collection to evaluate outcomes;
- identify apprenticeship opportunities and consider including apprenticeships in multiple state plans, not just the plans for Perkins.
- encourage local schools and postsecondary institutions to plan for apprenticeship programs;
- promote more articulation and dual enrollment agreements;
- partner with workforce councils and development offices to expand opportunities for effective use of WIOA funds;
- approve industry-recognized credentials that meet graduation, career and technical program, and apprenticeship completion requirements; and
- join forces with employers to expand opportunities for students.

Depending on their level of authority, state boards may also be able to approve the awarding of credit toward graduation for apprenticeship experiences, which may include waiving traditional coursework with equivalent learning in the workplace or related classroom instruction. It may entail considering comprehensive policies to allow for more flexibility in classroom hours, experiential learning, or demonstration of state content standards through alternative methods.

State boards of education have a critical role in the development and approval of state CTE plans. While structures and authority may vary, all boards can give students the chance to be better prepared for success in the workplace.

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is] important for all of you: Most of you have authority over teacher licensure institutions in your states. Historically, we have had agriculture and consumer science and business, and all of the CTE areas had to get licensure paths at land-grant institutions. Those have been decimated over the past 20 years. Look at that licensure path and say, "We really need more." How do we work with our institutions of higher education to create dedicated, easy licensure pathways so that the student who is on an engineering path but decides, "You know what, I don't want to be an engineer," has an easy way to step into a profession?

The second thing: Over 50 percent of our instructional force in CTE across the country has come out of the workplace. My second son is the other example—a computer science major from Colorado State working for Trimble, a geospatial company right outside Boulder. As much as he loves working with students and would absolutely volunteer for those pathways, he's not going to make a shift, especially if he has to take a 15- to 20-credit program that costs $500–$750 a credit. We've got to make sure that through authorizations we can get people in the classroom and then provide what they need, which is what Colorado did. They said, "OK, not each person coming from business is going to need the same thing." Nurses have been trained as clinical preceptors, and so they have a training and pedagogy. How do we make sure we honor that and not require the same thing of a nurse as we do of a machinist? ■

*More information on opportunities and flexibilities with Perkins V can be found in the Perkins V section of the Perkins Collaborative Resource Network at https://cte.ed.gov.*

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*cont'd from page 34...Apprenticeships*

[1]Tamar Jacoby, "Why Germany Is So Much Better at Training Its Workers," *The Atlantic* (October 16, 2014).
[2]U.S. Department of Labor, "Apprenticeship: Data and Statistics," updated March 6, 2019, https://doleta.gov/oa/data_statistics.cfm.
[3]National Conference of State Legislatures, "Apprenticeships in K-12 and Higher Education," website (November 26, 2018), http://www.ncsl.org/research/education/apprenticeships-in-k-12-and-higher-education.aspx.
[4]Kate Blosveren Kreamer and Andrea Zimmermann, "Opportunities for Connecting Secondary Career and Technical Education (CTE) Students and Apprenticeship Programs" (Washington, DC: U.S. Department of Education, June 2017).
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[6]Geoff King and Kristin Baddour, "State's Role in Advancing High-Quality Youth Apprenticeship," *Economic Opportunity* blog (Washington, DC: National Governors Association, N.d.), https://medium.com/nga-economic-opportunity/states-role-in-advancing-high-quality-youth-apprenticeship-87efb0fafccb.
[7]"Training and Employment Guidance Letter," WIOA No. 13-16 (Washington, DC: Employment and Training Administration, U.S. Department of Labor, January 12, 2017), https://wdr.doleta.gov/directives/attach/TEGL/TEGL_13-16_acc.pdf.
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[10]Katherine Eastman, "Manufacturing Program Opens Doors for Synergy Students," *Journal Inquirer* (June 11, 2018).