

The Pennsylvania Guide for Career and Technology Education's Role in Apprenticeship

June 2018



COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF EDUCATION

333 Market Street

Harrisburg, PA 17126-0333

www.education.pa.gov



Commonwealth of Pennsylvania

Tom Wolf, Governor

Department of Education

Pedro A. Rivera, Secretary

Office of Elementary and Secondary Education

Matthew S. Stem, Deputy Secretary

Bureau of Career and Technical Education

Lee Burket, Director

The Pennsylvania Department of Education (PDE) does not discriminate in its educational programs, activities, or employment practices, based on race, color, national origin, [sex] gender, sexual orientation, disability, age, religion, ancestry, union membership, gender identity or expression, AIDS or HIV status, or any other legally protected category. Announcement of this policy is in accordance with State Law including the Pennsylvania Human Relations Act and with Federal law, including Title VI and Title VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination in Employment Act of 1967, and the Americans with Disabilities Act of 1990.

The following persons have been designated to handle inquiries regarding the Pennsylvania Department of Education's nondiscrimination policies:

For Inquiries Concerning Nondiscrimination in Employment:

Pennsylvania Department of Education
Equal Employment Opportunity Representative
Bureau of Human Resources
Voice Telephone: (717) 783-5446

For Inquiries Concerning Nondiscrimination in All Other Pennsylvania Department of Education Programs and Activities:

Pennsylvania Department of Education
School Services Unit Director
333 Market Street, 5th Floor, Harrisburg, PA 17126-0333
Voice Telephone: (717) 783-3750, Fax: (717) 783-6802

If you have any questions about this publication or for additional copies, contact:

Pennsylvania Department of Education
Bureau/Office of Career and Technical Education
333 Market Street, 11th Floor, Harrisburg, PA 17126-0333
Voice: (717) 787-5530, Fax: (717) 783-6672
www.education.pa.gov

All Media Requests/Inquiries: Contact the Office of Press & Communications at (717) 783-9802

Table of Contents

Introduction: The Purpose of this Guide	4
Apprenticeships 101	4
Other Forms of Coordinated Training	8
Careers for Which Apprenticeship Programs Exist.....	11
Making the Case for Apprenticeships	13
Steps for Developing an Apprenticeship Program	17
Frequently Asked Questions	18
For More Information	19
Acknowledgement	21

Introduction: The Purpose of this Guide

Apprenticeship is gaining renewed attention as a strategy for preparing Americans for the workplace and for filling critical skills shortages experienced by employers. Pennsylvania, like many other states, is placing renewed emphasis on apprenticeship through a new office in the Department of Labor and Industry and with designated targeted funding to start up new apprenticeship, youth apprenticeship and pre-apprenticeship programs.

As of early 2018, there are 759 registered apprenticeships in Pennsylvania, with approximately 15,100 active apprentices participating. The goal of the Governor and the Department of Labor and Industry is to double the number of apprentices by the year 2025. What does this mean for Pennsylvania Career and Technical Education? Potentially, a lot!

Pennsylvania Career and Technical Education (CTE) is built on a solid structure of technical skills (called “task lists”) and deep experience in engaging business and industry expertise through Occupational Advisory Committees, already required for each CTE program approved through Pennsylvania Department of Education. Further, while many high schools offer state-approved CTE programs, a large percentage of CTE programs in Pennsylvania are delivered through a network of 80 Career Technology Centers (CTCs). All of the CTCs offer high quality CTE programs for high-school aged youth, and many of them also operate programs for adult learners.

These two elements – strong technical skills and deep ties to business and industry – make Pennsylvania CTE a strong potential actor in the growth of apprenticeship across the Commonwealth.

This guide, written with the CTE administrator in mind, can help you navigate the process of applying to be a Sponsor of an apprenticeship, or to be a close supporting partner in a vibrant apprenticeship program.

Apprenticeships 101

Almost everyone is familiar with the word “apprenticeship,” and most understand it to be some kind of a learn-as-you-earn experience for people entering certain occupations. But there’s much more to it than that. There are established criteria that define an apprenticeship program; there is a formal, federally recognized “registered apprenticeship” model that assumes additional requirements and offers certain exclusive benefits; and there are also entry-level versions of apprenticeships, including a youth apprenticeship (for those in high school) and even a pre-apprenticeship model, to help applicants get ready to participate in a formal program.

A. The Defining Characteristics of All Apprenticeship Programs

In its Work-Based Learning Toolkit, the Pennsylvania Department of Education defines apprenticeships as follows:¹

Apprenticeship is a career preparation activity designed to prepare an individual—generally a high school graduate—for careers in the skilled crafts and trades. However, some

apprenticeship programs accept high school students between the ages of 16 and 18 so that the student can get a head start on completing the program. Apprenticeships consist of paid, on-the-job training, supplemented by related classroom instruction. Apprenticeship training usually requires one to five years to complete, depending on which occupation is chosen.

State and federal registered apprenticeship programs are work-based education partnerships between industry, labor, education, and government. Apprenticeship is industry-driven and provides an effective balance between on-the-job training and the classroom and laboratory instruction that is needed to develop marketable knowledge and skills in one of the many programs sponsored nationally. There is a broad span of occupations from low tech to high tech in fields including medical, trades, crafts, and technology. Apprenticeships can be offered in almost any occupation in which an employer wants to have thoroughly knowledgeable and skilled employees who desire to climb the career ladder via the earn-and-learn apprenticeship model.

Note that apprentices are hired as employees at the companies with which they are apprenticing: You cannot be an apprentice if you are not employed and earning a wage.

There are five components to the typical apprenticeship program. These include:

1. Business Involvement

Apprenticeships are employer-driven. Because employers take on the responsibility for training – and paying - apprentices, they have the final say about what skills are taught on-the-job and by the related education provider. Employers either serve as the Apprenticeship sponsor or they work hand-in-hand with the Sponsor to decide on the standards for the program, the targeted outcomes, the education partners, and other aspects about how the apprenticeship will be administered. Because of the time and responsibility involved – and because apprentices are actually hired as employees and paid a wage that increases over the course of the program – employers have a deep and vested interest in the success and outcomes of the program.

2. Structured On-the-Job Training

The bulk of the time that apprentices spend in these programs is spent on the job, doing productive work while at the same time being taught relevant skills that will help him or her to advance. This work/training model is based on standards developed for each program, many of which are created based on established models and customized to the needs of the particular employer and supplemented with classroom instruction. Apprentices receive hands-on training and support from a mentor assigned to support their development.

3. Related Instruction

While the bulk of an apprentice's time is spent on the job, classroom instruction is an essential component of any program; in Pennsylvania, apprentices must complete 144 hours of classroom instruction for every 2,000 hours on the job. The Apprenticeship sponsor is responsible for selecting the education partner, which may include a mix of on-site, online, or school-based instruction with technical or academic high schools, adult night schools, community colleges, universities, correspondence courses, or online courses. Depending on the

scope of the apprenticeship program, education partners may collaborate with industry to develop or modify the curriculum.

4. Rewards for Skill Gains

Apprentices are paid employees; however, starting wages tend to be low, reflecting the lack of occupational skills. They receive pay increases as they meet benchmarks for skill attainment, which helps reward and motivate them as they move through the program.

5. Nationally-Recognized Credential

Every graduate of a Registered Apprenticeship program receives a nationally-recognized credential (“Graduate of Registered Apprenticeship”); this portable credential signifies to employers that those who completed an apprenticeship are fully qualified for the job. In addition, most apprenticeship programs incorporate the attainment of additional, industry-recognized credentials and microcredentials that certify the attainment of skills and further signify the growing professional development of the apprentice.

Note that apprenticeships require a greater commitment on the part of the employer and the young person than any other work-based learning model in existence. Apprenticeships can last from one to six years, and require a minimum of 2,000 hours of on-the-job training plus an additional minimum 144 hours of classroom instruction.ⁱⁱ Apprentice programs must meet state requirementsⁱⁱⁱ and either develop or adopt a sophisticated set of program standards that govern their activities and outcomes. Apprentices are hired as employees, and employers pay wages throughout the activity.

B. The Registered Apprenticeship Program

Apprenticeships do not have to be registered; however, it is highly recommended. Registered apprenticeships go through an approval process that can provide additional perspective, helping to establish the highest standard of quality; further, they receive the following benefits, as noted by the Department of Labor’s Employment and Training Administration (DOLETA):^{iv}

- **Technical Assistance and Support.** The program joins the apprenticeship network, which provides access to a nationwide network of expertise, customer service, and support at no charge.
- **National Credential.** Graduates of Registered Apprenticeship programs receive a national, industry recognized credential.
- **Quality Standards.** Registration means the program has met national and independent standards for quality and rigor. Registration tells prospective employees, customers and suppliers that you invest in your workforce and that you believe your employees are your most important asset!
- **Tax Credits.** In many states, businesses can qualify for tax credits related to apprenticeship programs. In addition, employers may be able to claim some expenses for training as a federal tax credit.
- **Federal Resources.** Businesses and apprentices can access funding and other resources from many federal programs to help support their Registered Apprenticeship programs.

C. Youth Apprenticeship Program

Apprenticeships are generally thought of as being appropriate for youth and young adults, ages 16-24; however, in practice, many of these are designed for individuals who have already graduated high school and are age 18 or older. When people talk about youth apprenticeships, they are referring to a program that is designed specifically for individuals aged 16-18, and is connected to an adult apprenticeship. While the standards and expectations of an apprenticeship still apply, the structure is usually altered to accommodate compulsory schooling requirements and any workplace safety restrictions that would prevent individuals under the age of 18 from participating in work activities. In early 2017, the U.S. Department of Labor and U.S. Department of Education issued joint guidance clarifying the allowability of youth apprenticeships for youths age 16-18.^v

D. Pre-Apprenticeship

A pre-apprenticeship program is simply a program, or a set of strategies, designed to prepare students to enter a formal apprenticeship program. As such, their focus is on preparing participants to meet the basic qualifications for entry into such a program, focusing on a training curriculum developed based on industry standards; educational and pre-vocational services; and hands-on opportunities, including work-based learning opportunities, capstone projects, and volunteering or service learning.

Pre-apprenticeship programs typically involve formal partnerships with at least one Registered Apprenticeship program sponsor. Note that the Pennsylvania Department of Labor and Industry's Office of Apprenticeship and Training offers apprenticeship grant programs that include support for pre-apprenticeship initiatives^{vi}

E. Sponsorship

Every registered apprenticeship program has a sponsor, and the sponsor is responsible for the overall operation of the program. The sponsor of the Apprenticeship does not necessarily need to be an employer. In fact, in the November 2017 "Pre-Apprentice and Apprenticeship Grant" program guidelines from the Pennsylvania Department of Community & Economic Development, the application indicates that proposals will be accepted from a wide variety of potential sponsors, including:^{vii}

- Single Employer
- Employer Consortiums
- Workforce Development Boards
- Economic Development Organizations
- Labor Organizations
- Local Career Technical Education Institutions (emphasis added)
- Pennsylvania Community Colleges
- Community Organizations or Associations.

Further, the application indicated that "partnerships and collaborations among the groups listed above are highly encouraged."

Other Forms of Coordinated Training

There are, of course, many different models for preparing students for the workforce, each requiring varying levels of time and resources, and each focusing on different outcomes. You may find that some of the models below serve as valuable complements to your apprenticeship program, either as an alternative for students not interested in serving as apprentices or as a preparatory activity for those who are.

1. Informal Apprenticeship Program (not registered)

The informal apprentice program is primarily an international model, though it does have some applicability to US schools and businesses. Informal apprentice programs are more often found in cultures that have fewer large businesses, schools, or other established institutions, and are comprised of agreements made between individual students and tradespeople.

According to the International Labour Organization,^{viii} “Informal apprenticeship refers to the system by which a young apprentice acquires the skills for a trade or craft in a micro or small enterprise learning and working side by side with an experienced practitioner. Apprentice and master craftsman conclude a training agreement that is embedded in local norms and traditions of a society. Apprentices learn technical skills and are inducted into a business culture and network which makes it easier for them to find jobs or start businesses when finishing their apprenticeship.”

2. Cooperative Education Program

The Pennsylvania Department of Education has a detailed description of Co-op Education, as seen below:^{ix}

Cooperative education is a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to a student's academic or career goals. It provides progressive experiences in integrating theory and practice. Cooperative education is a partnership among students, educational institutions and employers, with specified responsibilities for each party. These include:

1. Formal recognition by the school as an educational strategy integrating classroom learning and progressive work experiences, with a constructive academic relationship between teaching faculty and cooperative education faculty.
2. Structure for multiple work experiences in formalized sequence with study leading to diploma completion of an academic program.
3. Work experiences, which include both an appropriate learning environment and productive work.
4. Work experiences related to career or academic goals.
5. Formal recognition of the Co-op experience on student records (e.g., grade, credit hours, part of diploma requirement, notation on transcript, etc.).
6. Pre-employment preparation for students, as well as ongoing advising.
7. Agreement among the school, employer, parent/guardian and the student on:
 - a. Job description and new learning opportunities.

- b. Specified minimum work periods equivalent in length to an academic term (quarter, semester or trimester). In alternating programs, students work approximately 40 hours/week, full-time during the term. In parallel programs, students work approximately 20 hours/week, part-time during the term.
 - c. Work monitored by the school and supervised by employers.
 - d. Official school enrollment during employment.
 - e. Recognition as a co-op employee by the employer.
 - f. Evaluations by the student, the school, and the employer, with guided reflection by the student.
 - g. Remuneration for the work performed.
8. Provision for employer and school evaluation of quality and relevance of the work experience and curriculum.
 9. Designed to maximize outcomes for students, employers and the school.

While they share some similarities, co-ops differ from apprenticeship programs in a few ways. Apprentices are typically hired as employees; co-op students are not. With an apprenticeship, the Apprenticeship sponsor controls the process, whereas final responsibility for a co-op rests with an educational institution. Finally, apprentices are paid, with pay increasing as skills are developed; co-op students in Pennsylvania are paid, but may or may not see increased compensation over time.

The Opportunity to Blend Cooperative Education and Apprenticeship

Because of the many similarities between Co-op Education and Apprenticeship, it is possible for a high school student to be hired as an apprentice and also be designated as a co-op student at the same time. For example, in Fall 2018, two high school seniors enrolled at Western Area Career Technology Center (Canonsburg, PA), were hired as apprentices and were simultaneously enrolled as cooperative education students.

The certified Cooperative Education Coordinator on staff with WACTC gathered all the documentation needed for the co-op program. She then shared copies of the cooperative education documentation with the Apprenticeship sponsor (the German American Chamber of Commerce of Pittsburgh), which fulfilled the apprenticeship documentation requirements for the Department of Labor and Industry. The Coordinator maintains contact with the key person at the company, including participating in regular site visits

In the case of students being apprentices and co-op students, the Apprenticeship sponsor needs to be aware of the educational institution's ongoing responsibility to fulfill the Cooperative Education oversight role. Specifically, the co-op coordinator must gather necessary documentation and maintain an ongoing relationship with both the student and the workplace coordinator. Coordination between the parties is critical, since the educational institution is responsible for administering the co-op program, while the employer is responsible for administering the apprenticeship (remembering again that the apprentice, by definition, is an employee of the host company).

3. Boot Camp Training Program

Boot camp training programs are intensive models that offer classroom instruction in the skills and knowledge employers want, followed by an internship experience that allows students to put those new skills and experiences to the test in a real-world environment.

One well-known program is Year Up,^x which focuses on low-income adults, ages 18-24, and provides them with hands-on skills development, coursework eligible for college credit, corporate internships, and wraparound support. According to their website, “For the first six months of the program, students develop technical and professional skills in the classroom. Students then apply those skills during the second six months on an internship at one of Year Up’s corporate partners. Students take coursework eligible for college credit, earn an educational stipend, and are supported by staff advisors, professional mentors, dedicated social services staff, and a powerful network of community-based partners.”

While not as intensive or long-lasting as apprenticeships, these programs do offer a way for underserved populations to quickly develop skills and knowledge, and connects them with employers in ways that allow them to develop professional skills and build their resumes. They have a presence within Pennsylvania, operating an office in Philadelphia out of Peirce College.

4. Employability Skills Training

As any employer will tell you, finding candidates with strong employability skills – sometimes called “soft,” “workplace” or “interpersonal” skills – is a real challenge. The saying that “technical skills will get you hired, (lack of) employability skills will get you fired” is certainly true, so educators are putting a premium on the development of such skills.

One outgrowth of that need is the idea of employability skills training. These efforts are primarily school-based, with curriculum-based classroom instruction on topics such as communication, decision-making, time management and working as part of a team. They often include practice sessions, individual counseling, and some employer engagement through guest speaker visits, mock interview, site tours, and more.

5. Internship/Externship

The Pennsylvania Department of Education defines internships as follows:^{xi}

An internship is a career preparation activity in which students are placed in a workplace for a defined period of time to participate in and observe work within a given industry and occupation. Internships are highly structured, time-limited experiences that occur at a worksite. Unlike work experience, internships often allow students to rotate through a number of departments and job functions. Internships may be paid or unpaid, depending on whether the student is performing productive work. They are designed to give students hands-on experience, providing them a deeper understanding of the occupation and industry.

Internships differ from apprenticeships in important ways. They are of a much more limited term (usually a semester or less); payment is optional, and typically does not progress over time; and, rather than allow students to immerse themselves in a specific role, focus on giving them

exposure to a wider span of a business' operations. Students are responsible for doing substantive work and for meeting set deadlines, but as a rule they hold fewer responsibilities, for less time, than an apprentice.

Externships are of an even smaller scope, typically lasting from one day to two weeks, meaning they can be completed during the school year (often during spring break) or over the summer. They are typically unpaid, and focused more on giving students exposure to a business than completing in-depth tasks.

Issue for Attention: Student Safety and Security

Be aware that for students under age 18 enrolled in an educational program, there are specific background check requirements placed upon adults who have ongoing and direct contact with children through any kind of extended work-based learning program.

Here is guidance issued from the Pennsylvania Department of Education^{xii} on this topic.

What are the background check responsibilities concerning adults who have direct contact with children as part of an internship, externship, work-study, Co-op, or similar programs?

If the program, activity or service is an internship, externship, work-study, Co-op or similar program, only an adult applying for or holding a paid position with an employer that participates in the internship, externship, work-study, Co-op or similar program with a school and whom the employer and the school identify as the child's supervisor and the person responsible for the child's welfare while the child participates in the program with the employer is required to obtain the certifications, not all employees. The adult identified as the person responsible for the child's welfare is required to be in the immediate vicinity at regular intervals with the child during the program. School districts often enter into written understandings with those entities hosting internships, externships, work study, Co-ops or similar programs. In addition to identifying the supervisor the understanding may establish the terms of the supervision of the students in the program.

Careers for Which Apprenticeship Programs Exist

Years ago, the apprenticeship model was used primarily within a narrow set of professions, including construction and other skilled trades – positions that were hard to fill and that required a great deal of on-the-job training. Today, however, as other types of careers have become more sophisticated and required more real-world experience, this model is being applied across multiple industries in fields ranging from healthcare to finance. In fact, the US Department of Labor now lists more than 1,000 occupations as being apprenticeable!^{xiii} Following are a list of some of the most common areas in which apprenticeships are being used, including a link to more information on each from the Department of Labor.

1. Advanced Manufacturing^{xiv}

Apprenticeships have long been a fixture in advanced manufacturing; current high-need occupations being targeted with apprenticeships include CNC Set-Up Programmer — Milling and Turning; Machinist, Precision; Industrial Maintenance Repairer; Mold Maker, Die Casting, and Plastic Molding; Plastics Fabricator; and Tool and Die Maker.

2. Construction/Skilled Trades^{xv}

It can be difficult to attract youth to the building trades; apprenticeships serve as an easy path into a lucrative industry. Current high-need occupations suitable to apprenticeships include Bricklayer, Carpenter, Electrician, Elevator Constructor Mechanic, Pipe Fitter, and Plumber.

3. Energy^{xvi}

Energy is a rapidly-growing sector, one that requires a rising population of highly skilled workers. Current high-need occupations suitable to apprenticeships include Electrician, Powerhouse; Gas Utility Worker; Line Maintenance; Instrumentation Technician; Refinery Operator; and Substation Operator.

4. Finance and Business^{xvii}

The financial sector involves some occupations requiring a great deal of skill and experience, perfect roles for apprenticeships to support. Current high-need occupations suitable to apprenticeships include Bank Teller, Claims Adjuster, Insurance Underwriter, and Credit Coordinator.

5. Health Care^{xviii}

There is a great demand for qualified workers in health care, and apprenticeships provide an attractive path into some of the higher-skilled roles. Current high-need occupations suitable to apprenticeships include Dental Assistant, Emergency Medical Technician, Health Care Sanitary Technician, Paramedic, and Pharmacist Assistant.

6. Hospitality^{xix}

Most don't think about the hospitality industry when talking about apprenticeships, but there is a demand for workers in position that require solid skills. Current high-need occupations suitable to apprenticeships include Baker, Cook, and Housekeeper.

7. Information Technology^{xx}

The modern world runs on technology, and it takes a great deal of skill and experience to keep various types of hardware and software running. Current high-need occupations suitable to apprenticeships include Computer Operator, Computer Peripheral Equipment Operator, Computer Programmer, Information Management, and Telecommunications Technician.

8. Telecommunications^{xxi}

This sector keeps people across the country and around the world connected electronically, and apprenticeships can help to feed a great demand for professionals who understand how to build and maintain those networks. Current high-need occupations suitable to apprenticeships include Telecommunications Tower Technician, Wireless Technician, Telecommunications Antenna &

Line Lead, Telecommunications Antenna & Line Foreperson, Telecommunications Construction Lead, Telecommunications Construction Foreperson, and Fiber Optic Technician.

9. Transportation^{xxii}

Transportation, warehousing, and logistics have become essential sectors for our economy, and apprenticeships can help bring new skilled workers into the field. Current high-need occupations suitable to apprenticeships include Diesel Mechanic, Electronic System Technician, Heavy Equipment Mechanic, Ship Fitter, and Truck Driver.

Making the Case for Apprenticeships

One of the greatest challenges reported by career and technical education administrators is finding and engaging business partners for apprenticeships. This is understandable: Apprenticeships represent a major commitment of time and money on the part of employers, and they won't be willing to make that commitment unless they see a real return on their expected investment. Fortunately, for employers who face real challenges in finding capable workers in certain high-need fields, apprenticeships are one of the single best investments they can make. The information that follows outlines the benefits to all parties involved, and lays out a game plan for making the commitment as easy as possible for your partners.

A. Benefits

1. Benefit to the Business Partners

By investing in the development of a limited number of young people entering their field, employers benefit greatly in the following ways:

- **Connect early with prospective employees** – For employers seeking skilled employees in difficult-to-fill roles, building relationships with capable young people at an early stage offers a great advantage in hiring once they're fully qualified.
- **Better quality of employees** – Young people who complete an apprenticeship program are highly skilled and more likely to stay with an employer who invested in their development, reducing turnover costs.
- **More diverse workforce** – Many companies make diversity a priority; apprenticeships can be a valuable tool in giving underrepresented populations a path into various occupations, helping employers build a stronger and more diverse workforce.
- **Financial Return on Investment** – Using metrics of productivity and employee retention, companies can actually prove a financial return-on-investment for the resources they allocate toward hiring and training apprentices. This is documented in research by Case Western Reserve University.^{xxiii}

Financial Return on Investment

"Benefits and Costs of Apprenticeships: A Business Perspective" was released by Case Western Reserve University in 2016. It demonstrates the Return on Investment pay-off for businesses involved in apprenticeship. The Case Western Reserve research team conducted in-depth analysis of about a dozen companies, creating financial and productivity metrics by which to analysis the hard costs and returns of the apprenticeship model.

Here is the analysis from two of the sites:

- **Dartmouth-Hitchcock, a health system in Lebanon, New York.** Researchers found apprenticeship was a key factor in their expansion and reorganization plans. The apprenticeship program cost was \$59,700 per medical assistant that was apprenticed. The apprenticeship cost was offset by a \$48,000 per apprentice reduction in overtime costs and \$7,000 per apprentice increased revenue from medical appointment bookings. By having more skilled staff, they reduced overtime costs and increased patient booking. The apprenticeship program was financially self-sustaining in its first year and paid a 40 percent rate of return on the investment. Further, the analysis showed that reducing overtime for workers reduced burnout and maintained the quality of care for patients.
- **Siemens USA** also participated in the study, focusing on its electric generator operations in Charlotte, North Carolina. Its rate of return for the apprenticeship program was 50 percent, compared to typical approach of trying to hire machinists off the street. Siemens found that apprentice candidates have a strong grasp of the principles of their work (as opposed to just operational knowledge) so these apprentices could also handle more complex repair work which brings in more revenues for the company. Siemens also found that apprentices finished their work in a timelier manner and they were slightly more productive than other workers.

2. Benefit to the Student/Apprentice

Young people who commit to an apprenticeship program also receive substantial benefits, including:

- Income while learning
- An “inside track” to a good job
- Increased skills
- Higher wages
- National credential

3. Benefit to the School and Program

Like employers and students, educational institutions - such as Career Technology Centers - benefit greatly by being involved with apprenticeship:

- As an Apprenticeship sponsor, the educational institution can invite and encourage multiple companies to be apprenticeship hosts, thus opening up the apprenticeship model to more apprentices than a single company could hire
- The Apprenticeship provides a natural extension of the strengths of the school’s approved CTE programs – strong technical and employability skills and connections to employer.
- The Apprenticeship can help fine-tune the CTE program, making it even more attuned to the specific workplace needs of local employers.
- Apprenticeships forge a deep bond and ongoing relationship with existing employer partners, leading to additional support in the future

- By a stronger employer and workplace connect, student outcomes improve, leading to higher marks on key school and program metrics
- Apprenticeship offerings attract new employer partners

B. How to Find Business Partners

Career and technical education is intended to align with the needs of area employers: Programs should not exist at a school or college unless there is a demonstrated industry need for employees in those selected fields. Educators should think about apprenticeship programs in exactly the same way. Rather than deciding to start an apprenticeship program and then look for employer partners, it makes sense to talk instead with employers and business organization representatives (workforce boards, Chambers, economic development professionals) and build apprenticeship programs only in those areas where industry need ensures that employers are willing to make the necessary investment.

As you are investigating apprenticeship opportunities, look for the skilled occupations that employers say are absolutely the hardest to fill, where they spend weeks and months finding a few qualified candidates and then have a hard time holding onto good workers. These are the occupations with the highest “pain point” for employers, and thus, they will be more likely to seriously consider the benefits and responsibility of hiring and training apprentices for these occupations.

A demand-driven approach to apprenticeship programs makes it simple for program leaders to identify prospective partners: If program need was established in collaboration with employers and area business organizations, those same partners should be able to identify the businesses who actually hire in those occupational areas. Sector groups, workforce agencies, business coalitions, and economic development officials should all have direct knowledge of the employers facing those hiring bottlenecks, leading to a very strong list of target partners.

In addition to identifying prospective new partners, remember to leverage your program advisory committees: Committee members should be asked to participate in this discussion, and should also be counted on to identify their own acute hiring needs, leading to apprenticeship relationships with employers you already know. You can also look at trade organizations in industries known for leveraging the apprenticeship model; the Pennsylvania Apprenticeship Coordinator Association, or PACA, maintains a current list of such organizations by region. (See the county-by-county apprenticeship map at: <http://www.apprentice.org/countymap.html>)

C. How to Approach Business Partners/Making the Pitch

As with other types of employer partnerships, the most effective outreach to securing partners involves understanding and addressing employer needs. For that reason, you should consider doing the following in order to connect with your future partners:

- **Do Your Homework.** Before you meet with your prospective partner, learn what you can about their business, particularly regarding any hiring challenges they have, and whether you have any existing ties (such as teachers who came to you from that business, or former students who now work there).

- **Find a Connection.** One proven technique to making a strong first impression is to use a trusted intermediary. Ask someone from one of the area business organizations (Chamber, EDC, etc.) to introduce you; better yet, see if someone on your advisory committee has a relationship they can leverage. Encourage that person to participate in the initial meeting as an implied or explicit endorsement.
- **First Contact.** By far, the best way to reach out to a new industry contact is to focus on their needs. Simply contact them (or have your intermediary do so) and say, “I understand you hire [occupation]; we already have a program that prepares young people for the field, and we’re also exploring the idea of an apprenticeship program. I’d like your guidance on what they need to know, and be able to do, so they’re fully prepared for companies like yours.” If they have any hiring challenges at all, this question will offer a strong incentive for them to work with you; and even if no future relationship comes from the resulting meeting, you will be able to gather valuable information to keep your program relevant.
- **The First Meeting.** It can be difficult to find time to get off campus; however, the benefits of meeting your prospective partner at their business are substantial. You make it easy for them to see you; you make it possible for them to give you a tour of their facilities (again, providing information to strengthen your program); and you make it possible for them to introduce you to others in the company, increasing your network. Go to them, and keep the emphasis on what they do, and their needs. You can certainly share information on your program, but keep the spotlight on them at this stage. It’s a time to listen and learn.
- **Introduce Them to Your Team.** The first meeting is an opportunity for them to understand that your program is truly responsive to employer needs, a powerful position if they’re facing hiring challenges. Building on that, invite them to tour your program. Hold the tour during the day so they have a chance to meet instructors and students firsthand. It’s very important to keep the tour focused on the positives: Talk about the awards students have won, instructors’ industry experience, and the past students who are now working for them or their competitors. Don’t talk about your needs and barriers – remember that people like to join winning teams.
- **Follow Their Lead.** As you talk further about their needs and what your program can offer, follow their lead regarding the level of commitment they’re willing to offer. Apprenticeships are fantastic, but not every employer can make the commitment of time and money; and of those that can, some may want to get to know you better before doing so. If they’re not ready to host an apprentice, ask them to sit on your advisory committee, host a site tour, or work with you in some other way. You’ll still gain value and build a bridge towards a stronger future relationship.

D. Securing a Commitment

If your partner is interested in hosting one or more apprentices, great! It’s time to take that enthusiasm and turn it into a formal relationship. Sit down with them and walk them through the process; it will be reassuring to them to know that there are established practices, templates for paperwork, and oftentimes official recognition and support from the state. Talk through the parameters of the program you want to set up, letting them know where there is flexibility and

what elements are required. Be accommodating where possible but also very clear and direct on the commitment required so there aren't any surprises in the future.

Remember that the apprenticeship model offers very clear benefits to the employer (skilled, competent, loyal and productive workers). This is not a request for a charitable donation; rather, you are suggesting an investment from the company that offers return-on-investment.

With that mindset, complete the paperwork together, making sure that everything is documented and co-signed.

The next step is to have the Apprenticeship sponsorship and member companies approved and registered with DLI. And then you can begin the process to identify candidates, go through the interview process, hire, and onboard the new apprentices!

Steps for Developing an Apprenticeship Program

Apprenticeships are not created in a vacuum: There are rules and regulations to be accommodated, including Pennsylvania's Regulations Governing Apprenticeship and Training Programs,^{xxiv} which cover issues like selection of apprenticeships, record keeping, and more. Furthermore, each apprentice program must adopt or develop a set of quality standards and scope of instruction. Fortunately, models and templates have been developed for many of the occupations most commonly associated with apprenticeships, such as the building trades,^{xxv} metalworking,^{xxvi} and more, and DOLETA offers boilerplate forms for the development of standards by employers.^{xxvii}

According to Pennsylvania's Department of Labor and Industry (DLI),^{xxviii} there are seven steps for developing a registered apprenticeship program:

- **Develop Work Processes for On the Job Training.** The employer should take the lead on establishing the parameters of the apprenticeship program by identifying the list of competencies needed to make an individual competent in the chosen profession. Based on this they should develop the standards of apprenticeship, which include adopting a set of quality standards and learning outcomes; identifying the nationally-recognized industry credential(s) to be pursued; and identifying the working conditions (hours per week, location, etc.) of the apprentice.
- **Identify Sources for Related Instruction.** According to the Pennsylvania Department of Labor and Industry, registered apprenticeship programs must have a minimum of 144 hours of related classroom instruction for every 2,000 hours of on-the-job training, and the employer can decide with which educational institution he or she would like to partner in providing that instruction.
- **Develop Selection Procedure/Requirements.** As with any hiring effort, the employer must establish hiring criteria that ensures a fair and impartial process. Expectations for the internships, including the progression of wages based on advancing skills, should be made clear.
- **Institute Affirmative Action Plan when Necessary.** If there are any questions about over- or underrepresentation in an occupation, the employer should establish an

affirmative action plan in accordance with the guidelines found within Pennsylvania's Regulations Governing Apprenticeship and Training Programs. These issues need to be worked out directly with the DLI apprenticeship office.

- **Submit the Program to the Pennsylvania State Apprenticeship Council.** If the employer wishes to register the apprenticeship program – which is suggested given the support and recognition that registration offers – he or she must submit the program to the state's Apprenticeship and Training Office (ATO), which is housed within the Pennsylvania Department of Labor and Industry.^{xxix} The ATO helps employers prepare programs get approved by the Apprenticeship Council.
- **Register Apprentices.** Upon approval (assuming the program was submitted for registered status), the employer will hire one or more apprentices and register them with the Apprenticeship and Training Office.
- **Begin Program.** Once launched, registered programs require ongoing monitoring and status reporting.

Frequently Asked Questions

For a more thorough list of frequently asked questions and their answers, visit the US Department of Labor website.^{xxx}

What is the advantage of establishing a registered apprenticeship?

Apprenticeships do not have to be registered; however, it is highly recommended. Registered apprenticeships go through an approval process that can provide additional perspective, helping to establish the highest standard of quality; further, they receive multiple benefits, including technical assistance and support, a national credential (Graduate of Registered Apprenticeship), quality standards, tax credits, and federal resources including access to state and federal grant opportunities.

How is apprenticeship different from other types of work-based training?

Apprenticeships are one of the longest-term work-based learning models, lasting from one to six years depending on the occupation and apprenticeship model, whether based on time, competency, or a hybrid mix of the two. While there is an instructional component, apprenticeships are employer-focused, built around the worksite requirements of an actual occupation, and are explicitly established to allow the apprentice to earn one or more industry-recognized credentials. Finally, apprentices are employees of the hosting company, earning a wage that increases over time as their skills increase.

How much money can an apprentice earn?

Wages vary widely based on the length of the apprenticeship, the occupational pathway, location, and size of employer. However, according to DOLETA, the average wage for a fully-proficient worker who completes an apprenticeship is \$50,000 annually. Apprentices who complete their program earn approximately \$300,000 more during their career than non-apprentice workers.

Can Registered Apprenticeship programs be used in both non-union and union workplaces?

Yes. Registered Apprenticeship is a work-based training model for employers. There are more than 1,000 occupations across multiple industries. While unions are involved in several very successful apprenticeship initiatives, union participation is not required.

Is there one apprenticeship model that must be followed?

No. Apprenticeship is a flexible model, in which the employer has some discretion in terms of learning objectives (within the constraints of relevant job skills, and alignment with the pursuit of a national certification) methods, and timing. For example, there are many options for how, when, and where related instruction is provided to apprentices. It can take place during or after work hours, or be delivered one day a week while the apprentice works on the job the other four days. The instructional component can be arranged in different ways to suit both businesses and apprentices.

For More Information

A. Key Apprenticeship Contacts in Pennsylvania

1. Pennsylvania Department of Labor and Industry

The Office of Apprenticeship and Training, housed within the Pennsylvania Department of Labor and Industry, is a strong advocate for apprenticeships and provides financial support as well as information to those who make them possible. Their website offers information on the Department's Pre-Apprentice and Apprenticeship Grant Program, along with information on modifying program requirements to accommodate employer circumstances. This Department also houses the Apprenticeship and Training Council and provides access to the regulations governing apprenticeships in the state <http://www.dli.pa.gov/Individuals/Workforce-Development/apprenticeship/Pages/default.aspx>.

<http://www.dli.pa.gov/Individuals/Workforce-Development/apprenticeship/Pages/default.aspx>

2. Pennsylvania Department of Education, Bureau of Career and Technical Education

The Bureau of Career and Technical Education provides guidance, training, and oversight for career and technical education instruction at the secondary and adult levels within the state. They serve as the academic standard-bearer for CTE programs that offer apprenticeship opportunities to high school students, maintaining the state's Academic Standards for Career Education and Work, and ensuring that CTE students earn industry-recognized credentials and programs meet quality standards through a regular program approval and review process. They also provide guidance on apprenticeships, internships, and more through their Work-Based Learning Toolkit (<http://www.education.pa.gov/Documents/K-12/Career%20and%20Technical%20Education/Toolkits/Work-based%20Learning%20Toolkit%20FINAL.pdf>).

<http://www.education.pa.gov/K-12/Career%20and%20Technical%20Education/Pages/default.aspx>

3. Pennsylvania Apprentices Coordinators Association

The Pennsylvania Apprentices Coordinators Association, or PACA, is a statewide organization that works to inform and promote apprenticeship, especially in the unionized building trades. The organization's website provides information on several apprenticeship-driven occupations and offers a regional map listing all of the union and industry representatives involved in apprenticeships within that part of the state.

<http://www.apprentice.org/>

B. Non-Pennsylvania Resources and Links

1. U.S. Department of Labor, Office of Apprenticeship

The federal Department of Labor offers a valuable set of resources for anyone interested in setting up apprenticeship programs at the secondary, postsecondary, or adult levels. The site offers information, toolkits, and industry-specific guidance for employers, educators, and prospective apprentices alike. See <https://www.dol.gov/apprenticeship/>.

2. U.S. Department of Education

At the federal level, career and technical education falls under the oversight of the Office of Career, Technical, and Adult Education (OCTAE) within the US Department of Education. While OCTAE does not offer a standalone online area for apprenticeship information (referring traffic to the Department of Labor resources), they have published two informative guides recently, including:

Opportunities for Connecting Secondary Career and Technical Education (CTE) Students and Apprenticeship Programs (<https://careertech.org/resource/connecting-secondary-cte-and-apprenticeships>)

Connecting Secondary Career and Technical Education and Registered Apprenticeship: A Profile of Six State Systems (<https://careertech.org/resource/connecting-secondary-cte-and-registered-apprenticeship>)

3. State Programs

As noted by the US Department of Education, the following states have particularly innovative apprenticeship programs at the high school level (text below from the OCTAE website):^{xxxii}

In North Carolina, the NCWorks Youth Apprenticeship program offers high school students opportunities to earn credit for secondary Career and Technical Education coursework, college credits, and on-the-job training with a registered apprenticeship sponsor. After graduation, students complete their apprenticeship along with their associate degree, which is paid by the employer. Siemens and Ameritech are part of a consortium of employers that work with local high schools and Central Piedmont Community College on this workforce pipeline.

<http://nccommerce.com/workforce/job-seekers/apprenticeships/students>

In Wisconsin, the Youth Apprenticeship program, the oldest in the country, requires students to complete two years of 450 work hours per year and four semesters of related classroom

instruction. Students work in advanced manufacturing with employers such as Harley Davidson and LDI Industries. (<http://dwd.wisconsin.gov/youthapprenticeship/>)

In South Carolina, Apprenticeship Carolina has over 100 youth apprenticeship programs sponsored by different employers such as Agape Healthcare, IFA-Rotorion (advanced manufacturing) and Hull Hospitality Group (culinary arts). Students earn their registered apprenticeship certificate before or after high school graduation. (<http://www.apprenticeshipcarolina.com/youth-apprenticeship.html>)

The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a business- and industry-driven program designed to create a pipeline for high school students to enter postsecondary apprenticeship training in manufacturing, welding, electrical work and carpentry. Employers are able to tailor the program for their specific needs and to select the career and technical education courses and students for their apprenticeship pathway. Students receive a nationally recognized credential at little or no cost. (<http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>)

Acknowledgement

This report was prepared by the National Center for College and Career Transitions, under contract with the Bureau of Career and Technical Education, Pennsylvania Department of Education. The report was authored by Brett Pawlowski and Hans Meeder of NC3T.

-
- i http://static.pdesas.org/content/documents/Toolkit_WorkBased_Learning_2017.pdf
 - ii <http://www.dli.pa.gov/Individuals/Workforce-Development/apprenticeship/Pages/default.aspx>
 - iii <http://www.dli.pa.gov/laws-regs/regulations/Documents/r-19.pdf>
 - iv https://www.doleta.gov/oa/employers/apprenticeship_toolkit.pdf
 - v https://wdr.doleta.gov/directives/corr_doc.cfm?DOCN=4799
 - vi <https://dced.pa.gov/programs/pre-apprentice-apprenticeship-grant-program/>
 - vii <https://dced.pa.gov/programs/pre-apprentice-apprenticeship-grant-program/>
 - viii http://www.ilo.org/skills/projects/WCMS_158771/lang--en/index.htm
 - ix <http://www.education.pa.gov/Documents/K-12/Career%20and%20Technical%20Education/Teacher%20Resources/Cooperative%20Education/How%20to%20Comply%20with%20Federal%20and%20State%20Laws%20and%20Regulations.pdf>
 - x <https://www.yearup.org/>
 - xi http://static.pdesas.org/content/documents/Toolkit_WorkBased_Learning_2017.pdf
 - xii <http://www.education.pa.gov/Teachers%20-%20Administrators/Background%20checks/Pages/Act-15-Faqs.aspx>
 - xiii https://www.doleta.gov/OA/bul16/Bulletin_2016-28_Attachment1.pdf
 - xiv <https://www.dol.gov/apprenticeship/industry/advanced-manufacturing.htm>
 - xv <https://www.dol.gov/apprenticeship/industry/construction.htm>
 - xvi <https://www.dol.gov/apprenticeship/industry/energy.htm>
 - xvii <https://www.dol.gov/apprenticeship/industry/finance-business.htm>
 - xviii <https://www.dol.gov/apprenticeship/industry/healthcare.htm>
 - xix <https://www.dol.gov/apprenticeship/industry/hospitality.htm>
 - xx <https://www.dol.gov/apprenticeship/industry/it.htm>
 - xxi <https://www.dol.gov/apprenticeship/industry/telecommunications.htm>
 - xxii <https://www.dol.gov/apprenticeship/industry/transportation.htm>

-
- xxiii Helper, Susan, et al (2016), The Benefits and Costs of Apprenticeships: A Business Perspective, Case Western Reserve University & U.S. Department of Commerce. <https://www.esa.gov/sites/default/files/the-benefits-and-costs-of-apprenticeships-a-business-perspective.pdf>).
- xxiv <http://www.dli.pa.gov/laws-regs/regulations/Documents/r-19.pdf>
- xxv https://www.doleta.gov/oa/pdf/200903_ABC_Certification_Cover_Page.pdf
- xxvi https://www.doleta.gov/oa/bul12/bulletin12_06_guideline.pdf
- xxvii <https://www.doleta.gov/oa/boilerplates.cfm>
- xxviii <http://www.dli.pa.gov/Individuals/Workforce-Development/apprenticeship/Pages/default.aspx>
- xxix <http://www.dli.pa.gov/Individuals/Workforce-Development/apprenticeship/Pages/default.aspx>
- xxx <https://www.dol.gov/apprenticeship/toolkit/toolkitfaq.htm#1f>
- xxxi <https://sites.ed.gov/octae/tag/apprenticeshipworks/>