

Pre-Apprenticeships: A Head Start to Success

Apprenticeships have long been a vital part of manufacturing, dating back to at least to early Egyptians and Romans. The practice accelerated during the Industrial Revolution in the 1800s, and was formalized in the U.S. in 1937 with the National Apprenticeship Act to help workers learn the tools of a trade.

Today, apprenticeships are more important than ever, providing aspiring job seekers the necessary training, skillset, and mentorship for a pathway to lucrative and fulfilling



Steven Baney assembles a robot from a kit as part of the Advanced Manufacturing Pre-Apprenticeship (AMP) program at the Pennsylvania College of Technology.

careers. The ongoing labor shortage and growing skills gap throughout manufacturing has only heightened the need for such programs—and driven the process to start even sooner with new initiatives: Pre-apprenticeships.

Geared toward high school students and young adults, pre-apprenticeships provide general training to help attract and prepare the future workforce for careers in manufacturing, construction, and other fields—identifying industry needs to create a pipeline of qualified workers. Pre-apprenticeships can be especially helpful to underrepresented groups, such as women, minorities, and low-income individuals.

Good Pennmanship: The Pennsylvania Model

The number of unfilled manufacturing jobs has been growing nationwide for years. Pennsylvania is a case in point with more than 120,000 available manufacturing jobs at the beginning of 2023, according to Burning Glass Technologies.

At the same time, Pennsylvania is leading an effort to reverse the trend with innovative programs such as state-approved pre-apprenticeships through community colleges and

other local organizations.

One of the first schools on board was Pennsylvania College of Technology (Penn College) in Williamsport, Pa., which launched its pre-apprenticeship programs in 2018. The school's Advanced Manufacturing Pre-Apprenticeship (AMP) is aligned with four registered apprenticeships: computer numerical control operator; industrial manufacturing technician; mechatronic technician; and plastics process technician.

The college currently is working with 15 high schools; about 70 students are enrolled this year. Participants can complete the majority of the course online in the form of 27 self-directed modules, which are complemented by monthly in-person lab sessions. In addition to the core curriculum, instructors have access to additional content and learning tools to help students get the most out of the experience.

"The goal after graduating from the pre-apprenticeship program is to get hired or be trained in a full-time role by one of our industry partners," explained Ross Berger, the MIDAS Scaling Apprenticeship Grant manager and client support specialist for Penn College. "This allows our high school students to explore the field of manufacturing and determine if they want to pursue it, while giving young adult students the ability to land a job."

Involvement from industry partners is critical. Penn College worked with several manufacturers to create a foundational outline and identify in-demand job skills. After the program was up and running, companies were invited to contribute to in-person lab sessions and make presentations to students, which Berger noted can serve as a mini career fair that allows companies to better engage with job seekers.

To help promote and improve the program, Berger works closely with Pennsylvania's career education liaison network and contacts high schools throughout the state's 500-plus school districts. This includes sending informational flyers directly to schools, along with other mass-marketing efforts.

One of the main differences between a registered pre-apprenticeship and registered apprenticeship is the latter requires participants to be hired by an employer before starting the program. In contrast, anyone who meets the criteria can enroll in a pre-apprenticeship, but the programs must be linked with at least one registered apprenticeship program, according to PA Apprenticeship and Training Standards.

Penn College took the core components from traditional apprenticeships and boiled them down into a simplified pre-apprenticeship approved by the state.

"These programs are well suited to narrow the skills gap

and fill the talent pool at a time when there is a deficit of skilled workers,” said Tara Loew, director, Apprenticeship and Training Office at Commonwealth of Pennsylvania. “We believe registered apprenticeships (and pre-apprenticeships) should be offered as career pathways alongside a four-year college degree in which the individual is inserted into a scenario where they can match full-time work with education, which is a pretty compelling offer.”

Certifiable Benefits

Participants at Penn College receive the foundational technical knowledge needed for entry-level positions. This includes training in safety, quality, inspection, chemistry, fasteners, robotics, CNC machines, additive manufacturing, and other shop floor essentials.

Upon successful completion of the program, pre-apprentices are expected to be able to pass online learning modules aligned to foundational manufacturing technical competencies identified by SME.

As part of its program, Penn College also offers SME’s Certified Manufacturing Associate (CMfgA), an industry certification—focused on basic manufacturing concepts—that is designed to demonstrate a student’s potential for high-demand, entry-level manufacturing roles.

“From the beginning of the program, students have been completing modules developed by Tooling U-SME because they are a workforce development organization that truly understands what an individual needs to succeed in this industry,” Berger noted.

Students who earn a CMfgA receive the achievement as a Credly badge—a digital version of a person’s credentials that allows potential employers to quickly verify capabilities and relevant training. Badging was rolled into the program two years ago.

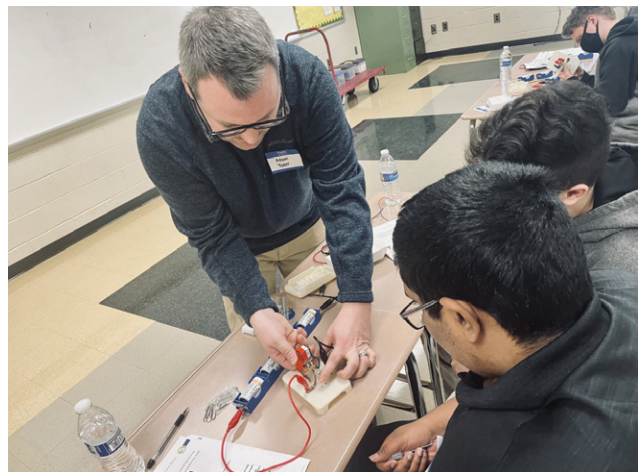
“In addition to the CMfgA badge, those who complete the pre-apprenticeship program will also receive a Certificate of Completion of Pre-Apprenticeship issued by the state,” Berger added. “Penn College is working on creating our own specific badges, as well. For the students, that will only add to their manufacturing credibility.”

In 2022, 92% of participants passed and earned a Certificate of Completion of Pre-Apprenticeship from the Apprenticeship and Training Office through the Pennsylvania Department of Labor and Industry.

Pre-apprenticeship programs targeting young adults are offered in conjunction with CareerLink offices in Pennsylvania as part of the state’s workforce development system.

Steven Baney is a good example. After graduating high school in 2018, Baney worked in a hospital kitchen before enrolling at Penn College to study aviation maintenance. Although he dropped out after one semester, Baney learned about the pre-apprenticeship program through CareerLink.

“I always wanted to work in manufacturing but wasn’t sure if it should be on the program or operation side,” Baney said. “The pre-apprenticeship gave me the ability to learn



Students in Penn College’s AMP pre-apprenticeship course practice principles of electrical circuitry with the assistance of instructor Adam Yoder.

about both, and I was able to get a job that fits my interests.”

After completing his pre-apprenticeship, Baney was hired at Construction Specialties in Montgomery, Pa., where he is currently training to be a CNC programmer.

“As our industry partners get more involved with our pre-apprenticeship program, they increasingly want to use it as a recruiting method,” Berger added. “The next step is to find credit and degree programs that might want to add pre-apprenticeships to their stable of offerings and see if there is a fit.” ➡

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