

9 Steps to Revitalize America's Manufacturing Communities

Action 5: Nurture Industrial Apprenticeships

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Rationale

In the post-World War II heyday of U.S. manufacturing, companies offered good paying, stable jobs and supplemented workers' experience with internal company training and mentoring, as well as with apprenticeship for many skilled trades (e.g., tool-and-die workers and machine repair workers). As employment flatlined and then fell, companies no longer provided job security, and many dismantled their apprenticeship programs.

More dependent today than in the past on hiring talent from outside the company instead of developing the skills of current employees, many manufacturers report difficulty attracting and retaining good new workers: companies expect 3.5 million manufacturing job openings over the next decade but 2 million of those to go unfilled.¹

Apprenticeship offers a proven approach to training skilled workers and customizing classroom education ("related instruction," as it is called in apprenticeship curricula), as well as providing work-based learning on the soft and technical skills required on the job. Apprenticeship delivers benefits for employers, workers, and the community at large. For every dollar invested in apprenticeship, Mathematica estimates a return of \$36 in benefits over the career of an apprentice.²

Renewed interest in apprenticeship has come along with innovation in its application to manufacturing. As technical skill requirements have decreased in increasingly automated factories, a new hybrid "industrial manufacturing technician" apprenticeship has been developed that provides a new "middle rung" on manufacturing career ladders, and a way to recognize (and make more portable) the skills of experienced manufacturing workers and new hires.³ To support small, high-tech startups, another competency-based apprenticeship program, the Maker Professional, has been developed that provides an introduction to "the digital toolset," and a platform for further skill development, including more advanced apprenticeships.⁴

Key Actions

- Increase subsidies for manufacturing apprenticeships that lead to good-paying jobs. These may come in the form of grant funding and/or tax credits, or by articulating apprenticeship-related instruction with college credit and making apprenticeship classes eligible for federal Pell grants and state support for community colleges.

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- Provide technical assistance to employers and apprenticeship sponsors. Apprenticeship is underutilized in the United States in manufacturing (and other sectors) in part because employers don't know about it, and because some non-union employers assume that apprenticeship only exists in unionized companies. Outreach to employers can be done by hiring staff with experience in sales, through a statewide marketing campaign, and with validation from employers with successful apprenticeships.
- Use group approaches to expand apprenticeship more rapidly. A growing number of states embrace "group apprenticeships" in which at least the classroom portion of the curriculum is coordinated across companies by a sector partnership, technical or community college, or other intermediary.
- Use the workforce development system to grow manufacturing apprenticeships.
- Promote capacity building and peer learning among manufacturing apprenticeships, emulating "sector academies" that have helped grow sector partnerships.
- Build community-based pathways to manufacturing apprenticeships in low-income communities and among diverse demographic groups and women.
- Expand youth apprenticeships, pre-apprenticeships, and other pipelines to apprenticeship, including by articulating the latter stages of high-school career and technical education and career pathways with manufacturing apprenticeships.

Issues to Remember

- High-road manufacturing companies (e.g., in the precision machining sector) invest their own funds

heavily in apprenticeship and, like many high-tech manufacturers, have no trouble attracting great workers.⁵ These champions can teach other manufacturers that training is an investment and not a cost, and encourage partnering with educators on solutions instead of blaming schools for the low skills of their graduates.

- As with sector partnerships, job quality and employee turnover should be used as criteria for distributing funds to and evaluating manufacturing apprenticeships. With any state workforce investment, a danger exists that some of the employers most interested in training money are those with low-quality jobs, high rates of turnover, and an ongoing appetite for a new group of workers trained (at least partly) at public expense.⁶

Recent Progress

- In 2017, New York established the Empire State Apprenticeship Tax Credit for employers who hire registered apprentices in occupations outside of construction. The tax credit is \$2,000 for the first year, and it increases to \$6,000 for fifth-year apprentices. The tax credit is higher for employers hiring disadvantaged youth (ages sixteen to twenty-four), ranging from \$5,000 to \$7,000.⁷
- In 2017, Maryland passed the More Jobs for Marylanders Act (SB 317), which provides employers with a tax credit (\$1,000) for each apprentice hired for at least seven months of the taxable year.⁸

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Notes

¹ “2018 Deloitte and The Manufacturing Institute Skills Gap and Future of Work Study,” Deloitte, 2018, available at <https://www2.deloitte.com/us/en/pages/manufacturing/articles/boiling-point-the-skills-gap-in-us-manufacturing.html>.

² Debbie Reed et al, “An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States,” *Mathematica Policy Research*, July, 2012, Table V.6, 41, available at https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_10.pdf.

³ See the Industrial Manufacturing Technician Apprenticeship website, <https://www.imtapprenticeship.org/>. See also Rhandi Berth, Laura Dresser, and Emanuel Ubert, “Moving Apprenticeships into Manufacturing’s Future: Industrial Manufacturing Technician,” Center on Wisconsin Strategy, February 2017, https://www.cows.org/_data/documents/1826.pdf.

⁴ For a case study of the app project that led to the Maker Professional apprenticeship, please see “New App for Making in America,” Workforce Innovation Fund, July, 2015, available at https://innovation.workforcecegs.org/resources/2016/03/28/15/26/New_APP_for_making_it_in_America.

⁵ In a survey of manufacturing establishments, Weaver and Osterman found that despite higher skill requirements, “...high-tech plants do not experience greater levels of hiring challenges.” See Andrew Weaver and Paul Osterman, “Skill Demands and Mismatch in U.S. Manufacturing,” *ILR Review*, volume 70, number 2, March 2017, 275–307, <http://web.mit.edu/osterman/www/SkillDemandsAndMismatch.pdf>.

⁶ For a discussion of this issue in the context of workforce and industry partnership investments generally, see Laura Dresser, Hannah Halbert, and Stephen Herzenberg, “High Road WIOA: Building Higher Job Quality into Workforce Development,” Economic Analysis Research Network, COWS, December, 2015, https://www.keystoneresearch.org/sites/default/files/KRC_WIOA.pdf.

⁷ “Empire State Apprenticeship Tax Credit (ESATC),” New York State Department of Labor, accessed April 1, 2019, <https://labor.ny.gov/apprenticeship/empire-state-tax-credit.shtm>.

⁸ Bryan Wilson, “Work-Based Learning Policy for Out-of-School youth and Disadvantaged Adults: Toolkit,” National Skills Coalition, October, 2017, https://www.nationalskillscoalition.org/resources/publications/file/NSC-WBL_PolicyToolkit.pdf.