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# **Engaging Manufacturers to Promote Skills Development**

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We can and must improve American education and technical training. . . . One of the great bottlenecks for this country's economic growth in this decade will be . . . a great demand and an undersupply of highly trained manpower.

—President John F. Kennedy (1962)

The challenge of workforce readiness has ebbed and flowed throughout U.S. history, often following the strength of the economy. Yet, while unemployment remains low in the wake of the Great Recession, 80 percent of manufacturers report a moderate or serious shortage of qualified applicants for skilled and highly skilled production positions. This is despite the fact that manufacturing executives are willing to pay more than market rates (Accenture and Manufacturing Institute 2014). This challenge is only expected to increase as a result of a retiring skilled workforce. By 2025, 2 million manufacturing jobs are expected to go unfilled because of an estimated 2.7 million retirements and 700,000 newly created jobs from natural business growth (Deloitte and Manufacturing Institute 2015). Many debate the exact nature of the skills gap and the numbers that support it, but students across the country are not coming out of the education system with skills matching the needs of the nation's employers. This is especially true in manufacturing, where the real cost to manufacturers because of skill shortages is up to 11 percent of net earnings. A survey of manufacturing executives reveals that they believe the emerging workforce is lacking technical and computer skills, problem-solving skills, basic technical training, and math skills (Accenture and Manufacturing Institute 2014; Deloitte and Manufacturing Institute 2015).1

At the same time, half of recent college graduates report that they are not using skills they learned in college at work, and 86 percent say they are learning new skills outside college (Rockefeller Foundation and Edelman Intelligence 2017). Community and technical colleges are playing an important role in upskilling, and 54 percent of working adults now believe it is "essential" to get training to update skills throughout their working lives (Pew Research Center 2016).

# COMMON WORKFORCE CHALLENGES MANUFACTURING EMPLOYERS FACE

### Costs of Workforce Development: Real and Perceived

Employers are increasingly taking charge of their workforce challenges. Instead of believing they can't afford to train and upskill internal talent, many employers now believe they cannot afford *not* to. A survey of manufacturers finds that the most common strategy to upskill employees in advanced manufacturing is to provide training in-house, followed by recruiting local STEM students and offering outside vocational training (PWC 2016). This training, however, comes at a cost. Manufacturers, when providing training in-house, report investing approximately \$3,000 per new hire and approximately \$1,500 per incumbent employee in training each year (Accenture and Manufacturing Institute 2014).

To address these costs, many regional and sectoral partnerships have emerged. Instead of competing with each other for business, employers are focused on working together to address their similar workforce challenges. These solutions often come in the form of partnering with local community or technical colleges and workforce intermediaries. Employers also are looking for longer-term strategies to invest earlier in the talent pipeline at the middle and high school levels.

## The Need for Early Engagement with the Talent Pipeline

Engaging the talent pipeline early is important because a common challenge among manufacturers is the negative perception of the industry and its corresponding career options. According to a recent study, although over three-quarters of those surveyed believe that manufacturing is important to Americans' economic prosperity and standard of living, one-third of respondents would not encourage their children to pursue a manufacturing career (Deloitte, Manufacturing Institute, and National Association of Manufacturers 2017). However, survey respondents who were familiar with manufacturing were nearly two times as likely to encourage children to pursue a manufacturing career. This finding demonstrates the importance of increased visibility of manufacturing opportunities in communities across the United States for both students and parents. Additionally, 64 percent of students surveyed by the Student Research Foundation and enrolled in career and technical education say their own interests and experiences have the strongest impact on what academic and career pathway they will choose. Early exposure to the broad array of manufacturing and employment opportunities is extremely important in ensuring a strong talent pipeline in the future

### Fears of Automation and Job Loss in Manufacturing from within the Potential Talent Pool

Another common challenge that manufacturers face is the perception that automation will decrease the number of manufacturing jobs. However, only 17 percent of surveyed manufacturers are reporting that robots and automation will result in hiring fewer employees. Around 37 percent of respondents believe that the adoption of advanced manufacturing technologies will result in hiring additional employees, while 45 percent said it will have no impact on hiring (PWC 2016). With advancing and emerging technology, educators and employers must unite to face the challenge of how to shape four principles for creating a strong manufacturing talent pipeline.

No matter who is taking the lead in organizing a local, statewide, or regional workforce development strategy, multiple partners are required to create a cohesive system responsive to industry demands. High-quality workforce partnerships offer various ways for employers to engage with the workforce system, such as talent pipeline development, engaging more females in the workforce, or retention and upskilling. Partnerships strengthen communication and allow workforce entities to meet employers where they are and find solutions to real-time challenges.

To ensure that the employers' perspectives were accounted for in addressing workforce challenges, the National Association of Manufacturers (2014) assembled a Task Force on Competitiveness & the Workforce, made up of 17 National Association of Manufacturers board members representing large and small manufacturers. This task force outlined four guiding principles for building a skilled workforce. These principles focused on manufacturers coming together to speak with one voice regarding their workforce needs and engaging with key stakeholders in their community to build a system that delivers a sustainable pipeline of skilled talent. These four principles include:

- 1) Determine your organizations' hiring needs and assess available training programs or whether other options are needed.
- 2) Align and collaborate with other manufacturers.
- 3) Engage with educational institutions and other training providers.
- 4) Create a system to build and sustain a talent pipeline by engaging with schools and promoting manufacturing as a career choice.

An intermediary between employers and educators is often crucial in helping articulate needs expressed by employers and translate such needs to action items carried out by academic partners or workforce agencies. For instance, the Manufacturing Institute, in partnership with the National Aviation Consortium, created a return on investment calculator to assess the business impact of the skills gap. The calculator measured potential savings based on reduced employee turnover, reduced hiring costs, or replacing on-the-job training with partnerships with local education or training institutions. This can be especially helpful as intermediaries or education and training partners work to make the case for engagement to employer partners.

#### EMPLOYER-LED BEST PRACTICES

Some of the most promising initiatives across the country involve local industries partnering with nearby high schools, community colleges, or college systems to bring relevant classes to their institutions, while also bringing students into the workplace to gain on-the-job experience. This is beneficial for both the companies that build and sustain a steady stream of qualified workers and the schools that provide students with high-quality work experience while earning a salary and academic credit. Upon completing courses, students will be equipped with an industry-backed certification and have more opportunities to continue through school or their respective career pathways.

The following sections detail similar initiatives employers have undertaken to address their talent challenges in their communities. When thinking about local replication of any of these best practices, it is important to remember that employers are not always ready to dive head first into costly or time-consuming projects to address their workforce challenges. A toolkit with a range of target areas and engagement opportunities allows workforce entities to meet employers where they are as they begin to craft solutions to their respective challenges. These examples provide a range of engagement, from a month or less to longterm systematic interventions, as well as across various focus areas in the talent pipeline.

## **Engaging All Levels of the Talent Pipeline**

## Students, the future manufacturing workforce

Providing early exposure to the wide range of manufacturing careers is a key step in creating a solid talent pipeline for years to come. Vermeer Corporation has taken an initial step to engage nearly 700 local students from 10 different schools in Pella, Iowa, targeting sixth and ninth grades by inviting them to an on-site annual Manufacturing Day event with the goal of expanding general knowledge of manufacturing and its careers. At 30 different activity areas, Vermeer team members spoke about their unique roles and skill sets, and how they impact the world. They offered a hands-on activity or question that complemented that discussion and/or highlighted a related STEM concept. Prior to the inaugural event, two Vermeer staff spent 30 hours over four weeks planning and organizing. In subsequent years, planning time is cut in half. On the day of the event, around 100 individuals staffed the event, including staff to welcome students and lead tours and activities. After just one day, 40 percent of surveyed students increased their understanding of manufacturing and 35 percent increased their desire to work in manufacturing.<sup>2</sup>

### **Entry-level talent**

To help ensure that their local manufacturing community has a pool of quality fabrication and assembly workers from which to choose, APSCO Power in Tulsa, Oklahoma, is providing students from three area high schools with on-site training and firsthand experience of what it's like to work in the dynamic and challenging field of manufacturing. In the fall, students tour APSCO's automotive parts fabrication and assembly facility, and in the spring, interested students are interviewed and selected for the Certified Production Technician (CPT) internship program. About 45 students participated in the 2017 CPT program. Interns train as a CPT for three hours a day from January to May and are paid \$10 an hour. Upon completion of the program, students receive a preemployment interview. ASPCO hires at least two interns, and other partner companies hire the remaining students. APSCO is the primary sponsor of the program and invests about \$1,000 per student for paid internships. The company has set up a nonprofit to raise funds and help offset the costs of the program.<sup>3</sup>

## Incumbent leadership development and community engagement

Manufacturers looking to increase visibility in their communities as well as provide leadership opportunities to their newest talent could follow Behlen Mfg. Co.'s example by creating a community ambassador model. Behlen created a Career Dream Team to spotlight a group of talented young employees from area manufacturers and related businesses (with STEM plus business needs) and had them play the role of ambassadors for their regional industry to local middle and high school education partners. They bring forward a message of inspiration, passion, and drive to potential talent pools who are starting or changing their career paths. Career Dream Team Ambassadors reach out to students and parents through classroom visits, career fairs, company tours, job shadowing, community events, and radio programs. Behlen designated an employee as the Dream Team Coordinator to build relationships with local manufacturers and schools, set monthly/bimonthly meetings with the ambassadors to discuss upcoming opportunities,

help with presentations, and serve as an overall resource. Whether they are speaking to students, women, or veterans, ambassadors help audiences understand and see themselves in the career pathway of various manufacturing jobs. The Career Dream Team is a low-cost, high-impact approach to inspiring the next generation of manufacturers, improving the regions' talent supply chain, and increasing companies' exposure in their communities.4

## **Upskilling incumbent talent**

Because technology is constantly advancing and continuous training is becoming necessary to maintain relevancy of skills and competencies, some employers have created continued learning requirements for incumbent workers. The manufacturing firm ATL Technology based in Springville, Utah, for example, commits to 40 hours of training a year for each employee and partners with Salt Lake Community College's (SLCC) Medical Device Manufacturing program to help employees fulfill this requirement. In four, eight-week-long courses, the employed students gain core knowledge and new skills needed to be successful in the medical device industry. The company's CEO, Brad Brown, even took the introductory course himself, reporting that he found the instructors to be "outstanding." From the program's beginning in 2015 through early 2017, 22 employees went through the program and took at least the introductory course. ATL Technology pays the program tuition for its employees and offers an incentive to take the course by providing a 1 percent pay raise for every completed class, with a maximum 4 percent raise. ATL Technology representatives indicate that the SLCC training helps reduce turnover by investing in its employees and that the company is experiencing 50 percent savings on training costs by partnering with a local community college.<sup>5</sup>

## **Employee retention strategies**

Manufacturers, especially small- and medium-sized employers, face several challenges with employee retention. In recent years, employees' personal finances have played a larger role, when even small bumps in the road can have major consequences for those with less than \$1,000 in savings (Huddleston 2016). Louisville, Kentuckybased manufacturer Universal Woods, a company with fewer than 250

employees, has attempted to address employee retention by embedding financial strategies into its corporate culture. These strategies aim to help reduce turnover by offering virtually all employees generous benefits that include a compensation package with a competitive wage, quarterly bonuses based on sales, a 401(k) retirement plan, unlimited paid vacation time, and health care benefits with affordable deductibles. Furthermore, the company also provides employees with holiday gift cards, an emergency \$1,000 loan program, and financial planning assistance.

In addition to their generous benefits package, Universal Woods works to upskill its incumbent workforce by offering on-site classes administered by Jefferson Community Technical College. These education programs include English as a second language and an assertive cross-training, on-the-job learning program to enforce the expectation that all employees will be trained to perform several jobs instead of being restricted or limited to one particular job. The company's retention strategy includes team-based leadership with minimal supervision companywide; providing lunch on overtime days or nights; incorporation of nonexempt employees into customer visits, student events, and plant tours; flexibility in scheduling for planned absences for children events, family issues, or appointments; and transparency of the company's financial information and plans. Despite the costs associated with these programs, Universal Woods' profitability has significantly increased since 2010, and the company has experienced a 43 percent increase in its employee retention rate.6

## **Engaging Target Populations**

According to leading executives, "There is a direct correlation between diversity and inclusion and profitability, including the speed and type of innovation, and diversity of thought" (Deloitte and Manufacturing Institute 2017). With this in mind, manufacturers are looking to recruit and retain new target populations, such as women and veterans. By engaging talent pools that are traditionally underrepresented in their industry, manufacturing executives are finding that their companies are improving profits and innovations.

#### Women

Manufacturers across the country are looking for ways to recruit female talent to manufacturing and retain the talent that they have. In 2016, women totaled about 47 percent of the U.S. labor force, but only 29 percent of the manufacturing workforce, despite holding more than half of all U.S. managerial and professional positions across all industries (Bureau of Labor Statistics 2015). In a recent survey, respondents indicate that having women on leadership teams increases manufacturers' ability to deliver diverse perspectives in decision making, innovative and creative approaches and solutions, balanced organizational management, and improved financial performance (Deloitte and Manufacturing Institute 2017). A 2016 analysis shows that an increase from no females in corporate leadership to 30 percent representation is associated with a 15 percent increase in net profitability (Noland, Moran, and Kotschwar 2016).

When considering efforts to retain and grow female incumbent talent, women in manufacturing indicate that formal and informal mentorship programs, flexible work practices, and increasing the visibility of key leaders who serve as role models are the key drivers of their decisions to stay and grow in manufacturing (Deloitte and Manufacturing Institute 2017). To provide increased opportunities for exposure, the Manufacturing Institute created the STEP Ahead Initiative, an annual award and leadership program that honors female leaders in manufacturing. By nominating female incumbent talent, employers provide opportunities to connect talented workers to key leaders within the company and their community. Since 2013, the Institute has honored 672 women in manufacturing who have mentored and sponsored more than 300,000 individuals—from peers in the industry to school-age children (Deloitte and Manufacturing Institute 2017).

The firm Dudek & Bock in Chicago, Illinois, created a program to provide its female employees leadership opportunities and help the company build a talent pipeline for potential internships and future employees by exposing young girls to the diverse roles in manufacturing. Dudek & Bock Spring Manufacturing partnered with Triton College's GADgET (Girls Adventuring in Design Engineering and Technology) summer program. Designed to introduce girls between the ages of 12 and 16 to the world of manufacturing, this summer program features a site visit for approximately 40 "GADgET Girls" hosted by the female employees of Dudek & Bock, which includes a facility tour and a "Lunch & Learn," where female senior management discuss career opportunities available in manufacturing. GADgET is done in partnership with the Fabricators & Manufacturers Association and funded by the Chicago Foundation for Women, the Paul M. Angell Foundation, NICOR, and the Kinder Morgan Foundation, such that the company incurs few to no hard costs outside of staff time. Dudek & Bock dedicate two to three employees to plan for the half-day event, devoting around 15 hours, and four to five employees participate in the event for 3.5 hours.<sup>7</sup>

#### Veterans

Evidence shows that recruiting veterans provides many advantages for employers, as veterans quickly learn new skills and concepts, perform well under pressure, work well in teams or independently, and have proven leadership skills (Institute for Veterans and Military Families 2012). Sandvik Coromant, headquartered in Sandviken, Sweden, with locations in the United States, has been capitalizing on this talent pool for over 50 years by providing training for veterans interested in manufacturing, allowing them to find opportunities to develop their careers in the manufacturing industry. The training takes place within their own facilities, online or with local institutions to help develop upto-date curriculum with the latest modern manufacturing skills. Sandvik funds this training as part of its regular operations budget, comprising 6 percent of its research and development budget, including a designated full-time employment trainer.<sup>8</sup>

#### EMPLOYER-LED POLICY SOLUTIONS

Federal legislation such as the Carl D. Perkins Career and Technical Education Act and the Workforce Innovation and Opportunity Act are in place to support the alignment of education and training programs to employers' needs, but state policy also plays an important role in bringing partners together to address the regional workforce needs. Many of

the most successful models focus on supporting two-year institutions to address the changing needs of the state and local economy.

Kansas has been a leader in using state policies to engage students in college preparation and workforce development as early as eighth grade. Each student enrolled in grades 8 through 12 receives an individual career plan. The state also has created incentives for high schools to take advantage of dual enrollment, especially in Career and Technical Education (CTE), by awarding \$1,000 per high school graduate to the respective school district if a student earns an industryrecognized credential in a high-need occupation. These awards must be used to reimburse students for up to half the cost of an industryrecognized credential assessment. Additionally, high school students are eligible to receive free tuition for college-level CTE courses, including night and online classes. The state has also implemented the Kansas WORKReady! Certificate, a credential that gives employers and job seekers a uniform measure of key workplace skills. These initiatives have given students opportunities to access postsecondary education, while local employers can count on a more reliable stream of qualified workers to fill existing skills gaps.9

South Carolina has focused on apprenticeships to help fill the needs of employers across the state through the creation of Apprenticeship Carolina in 2007, and as of mid-2017, served 18,117 apprentices in 876 apprenticeship programs, with close to 6,500 active apprentices. 10 Employers who take on apprenticeships are awarded a \$1,000 tax credit per apprentice and are given access to complimentary apprenticeship consultants to guide them through the registered apprenticeship development process.

While governor of Indiana, Vice President Mike Pence and the state legislature proposed several bills targeted at creating industry partnerships to bolster internship opportunities for students, such as Indiana Works Councils and Indiana Career Council, and to better align education and workforce efforts. Both councils draw on public and private sector expertise to coordinate participants in the state's educational, job skills, and career training systems and provide work-based learning opportunities for high-wage, high-demand jobs. The 11 regional Works Councils focus on alignment of regional CTE training with local business needs and have awarded millions in innovation CTE training grants to school-business partnerships. The Career Council's mission encourages college completion and/or attainment of postsecondary skills, and improved performance of the state's career services to students and adults. Indiana has also created several career academies, which serve as one of many options for public high school and middle school students.<sup>11</sup>

Tennessee has created a statewide Drive to 55 campaign to get 55 percent of Tennesseans equipped with a college degree or certificate by the year 2025. As part of the campaign, the state legislature established Tennessee LEAP (Labor Education Alignment Program) in 2013 after receiving calls from around the state asking for greater communication between education and industry to proactively align the supply of graduates to future industry needs. LEAP has two main components: a \$10 million Skills Gap competition and the creation of a Workforce Subcabinet to review applications for the Skills Gap competition. To apply for the Skills Gap grants, a group must create a Drive to 55 regional alignment group that will focus on existing best practices and forecasting future regional workforce needs to fund program development or supply necessary equipment.<sup>12</sup>

Despite the numerous changes needed in the education system and in state and federal policies to address both the skills gap and the need for upskilling to keep up with the rapid pace of innovation in the United States, many companies and schools have enacted partnerships and policies upon which to build their own strategies. These strategies are different, depending on local and regional needs and opportunities. No one company or education provider can accomplish this feat alone; however, policies at the state and federal levels should help incentivize firms to support and sustain these partnerships moving forward to ensure a U.S. workforce that is equipped for the twenty-first century.

#### **Notes**

- 1. Percentage of executives indicating current employees are not sufficient in the following key skills: technology/computer, 70 percent; problem solving, 69 percent; basic technical training, 67 percent; math, 60 percent.
- See "Vermeer's Manufacturing Day," http://www.themanufacturinginstitute.org/~/media/c950cfab74854842b8bd7671345c3558.ashx (accessed February 6, 2018).
  To learn more about Vermeer's Manufacturing Day, contact Teri Vos, Corporate Communication, at terivos@vermeer.com.

- 3. See "APSCO's Certified Production Technician Program, http://www .themanufacturinginstitute.org/~/media/c533779524d34b31b6178ab2d17412fa .ashx (accessed February 6, 2018). For more information on APSCO's CPT Education Program, contact Stephanie Cameron at scameron@apscopower.com.
- 4. See "Behlen's Career Dream Team," http://www.themanufacturinginstitute.org/~/ media/1e294ce3983e46f1825bcb18d9b7edad.ashx (accessed February 6, 2018). To learn more about Behlen's Dream Team, contact Juli Thelen at juli.thelen@ behlenmfg.com.
- 5. See "ATL Technology's Biotech Training Partnership," http://www.mfgtalenthub .com/wp-content/uploads/2017/06/ATL-Technology-1.pdf (accessed February 6, 2018). To learn more about ATL Technology's Biotech Training Partnership, contact Kay Carter of Salt Lake Community College at kay.carter@slcc.edu.
- 6. See "Universal Wood Education Assistance Program," .themanufacturinginstitute.org/~/media/663dc4dcbbc948278e0c168b5b86 cab4.ashx (accessed August 2017). For more information on Universal Woods' Employee Retention Program, contact Tim Holt at timholt@prodigy.net.
- 7. See "Dudek & Bock's GADgET Girls Partnership," http://www.mfgtalenthub .com/wp-content/uploads/2017/06/Dudek-Bock.pdf (accessed February 6, 2018). To learn more about Dudek & Bock's GADgET Girls, contact Kathleen Dudek at KDudek@DUDEK-BOCK.com.
- 8. To learn more about Sandvik Coromant's Veteran Training, contact JoAnn Mitchell, Senior Project Leader at joann.mitchell@sandvik.com.
- 9. See "Career and Technical Education in Kansas Fact Sheet," http://www.kansas commerce.com/DocumentCenter/Home/View/1286 https://www.kansasworks .com/ada/skillmatch/skl WorkReadyOverview.cfm (accessed February 6, 2018).
- 10. See Apprenticeship Carolina, http://www.apprenticeshipcarolina.com/ (accessed February 6, 2018).
- 11. See Indiana Career Council, http://www.in.gov/icc/ (accessed February 6, 2018).
- 12. See Drive to 55: LEAP, http://driveto55.org/initiatives/tennessee-leap/ (accessed February 6, 2018).

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