

EDUCATION LIFE

Wanted: Factory Workers, Degree Required

By JEFFREY J. SELINGO JAN. 30, 2017

When the German engineering company Siemens Energy opened a gas turbine production plant in Charlotte, N.C., some 10,000 people showed up at a job fair for 800 positions. But fewer than 15 percent of the applicants were able to pass a reading, writing and math screening test geared toward a ninth-grade education.

“In our factories, there’s a computer about every 20 or 30 feet,” said Eric Spiegel, who recently retired as president and chief executive of Siemens U.S.A. “People on the plant floor need to be much more skilled than they were in the past. There are no jobs for high school graduates at Siemens today.”

Ditto at John Deere dealerships, which repair million-dollar farming machinery filled with several dozen computers. Fixing tractors and grain harvesters now requires advanced math and comprehension skills and the ability to solve problems on the fly. “The toolbox is now a computer,” said Andy Winnett, who directs the company’s agricultural program at Walla Walla Community College in Washington.

These are the types of good-paying jobs that President Trump, blaming trade deals for the decline in manufacturing, has promised to bring back to working-class communities. But according to a study by Ball State University, nearly nine in 10

jobs that disappeared since 2000 were lost to automation in the decades-long march to an information-driven economy, not to workers in other countries.

Even if those jobs returned, a high school diploma is simply no longer good enough to fill them. Yet rarely discussed in the political debate over lost jobs are the academic skills needed for today's factory-floor positions, and the pathways through education that lead to them.

Many believe that the solution is for more Americans to go to college. But the college-for-all movement, which got its start in the 1970s as American manufacturing began its decline, is often conflated with earning a bachelor's degree.

Many high school students rush off to four-year campuses not ready for the academic work or not sure why they are there. Government data show that 44 percent of new graduates enroll directly in a four-year college, but based on recent trends, less than half of them will earn a degree within four years. And though two-year colleges have long been identified as the institutions that fill the job-training role, some 80 percent of community college students say they intend to go on for a bachelor's degree, or they leave with generic associate degrees that are of little value in the job market.

Students in the United States are offered few feasible routes to middle-skill careers — jobs that require more education than a high school diploma but typically not a bachelor's degree. The National Skills Coalition, a nonprofit organization, calculates that middle-skill jobs — in computer technology, health care, construction, high-skill manufacturing and other fields — account for 54 percent of the labor market, but only 44 percent of workers are sufficiently trained.

“The bachelor's degree is the gold standard, but the higher education system has to create ways for students to choose training and education in their own time and sequence,” said Anthony P. Carnevale, the director of the Center on Education and the Workforce at Georgetown University. “Higher ed,” he said, “needs to respect the dignity of labor.”

Faced with a skills gap, employers are increasingly working with community colleges to provide students with both the academic education needed to succeed in

today's work force and the specific hands-on skills to get a job in their companies. John Deere, for example, has designed a curriculum and donated farm equipment to several community colleges to train technicians for its dealer network. About 15 to 20 students come through the program at Walla Walla each semester. Because they are sponsored by a John Deere dealership, where the students work for half the program, most graduate in two years with a job in hand. Technicians start at salaries just shy of \$40,000, on average.

Dr. Carnevale's research has found that 40 percent of middle-skills jobs pay more than \$55,000 a year; some 14 percent pay more than \$80,000 (by comparison, the median salary for young adults with a bachelor's degree is \$50,000).

Jobs like the ones John Deere offers are still associated in people's minds with students who performed poorly in high school, those considered "not college material." But to succeed in programs like those at Walla Walla, students need to take advanced math and writing in high school, academics typically encouraged only for those going on to four-year colleges.

Persuading students and their parents to consider the apprenticeship track is a tough sell, especially because companies want students who have a strong academic background.

Struggling to fill jobs in the Charlotte plant, Siemens in 2011 created an apprenticeship program for seniors at local high schools that combines four years of on-the-job training with an associate degree in mechatronics from nearby Central Piedmont Community College. When they finish, graduates have no student loans and earn more than \$50,000 a year.

"These are not positions for underachievers," said Roger Collins, who recruits apprentices for Siemens at 15 Charlotte-area high schools.

Chad Robinson was one of those students. Ranked in the top 10 of his high school's senior class, with a 3.75 grade-point average, he had already been accepted to the engineering school at the University of North Carolina at Charlotte when he told his parents he wanted to shift course and apply for the Siemens apprenticeship.

“They were very against it,” he said, until they went to the open house. “A lot of my friends who majored in engineering in college told me they wish they had done the apprenticeship because my work experience will put me ahead of everyone else.”

IT is not uncommon to find executives in Europe who got their start in apprenticeships, which are seen as a respected path to a profession in a variety of fields, from hospitality to health care, retail to banking.

In the United States, on the other hand, apprenticeships have long been associated with the construction trades and labor unions. That can be traced to a Depression-era labor shortage that led Congress to pass the National Apprenticeship Act. The act formalized standards and empowered the Labor Department to certify training, which was mostly in manual labor occupations. Unions took on the task, tightly controlling apprenticeship opportunities and passing them down through the generations.

In the decades after World War II, registered programs expanded in number and type, with the addition of fields like firefighting and medical technician. But apprenticeships never caught on, relegated to a second-class career track as college enrollment ballooned in the 1960s and '70s, and more recently mirroring the falloff in the influence and membership of labor unions.

The Department of Labor's registry now lists 21,000 programs with about 500,000 apprentices, which sounds impressive but represents only 1.5 percent of 18- to 24-year-olds in this country and is far short of demand. Still, participation is up 35 percent and the number of programs by 11 percent since 2013.

Apprenticeships are making a comeback thanks in part to bipartisan support among lawmakers. In the last two years, Washington has allocated \$265 million to spur programs. President Obama's secretary of labor, Thomas E. Perez, a strong proponent, attempted to rebrand apprenticeships to appeal to educators and parents. During his tenure, the department established a partnership between registered community colleges and sponsors that allowed on-the-job-training to count as academic credit toward a degree.

“Apprenticeship is the other college, except without the debt,” said Mr. Perez, who had a goal of doubling the number by 2018. Advocates are hopeful that the trend will continue with new leadership in Washington, given President Trump’s familiarity with construction.

While the building trades still dominate, the types of occupations offering internships have expanded to include jobs like pharmacy technician, I.T. project manager and insurance adjuster. Aon, the insurance and financial services company, last month announced a program in Chicago in which high school graduates get training in account management, human resources, financial analysis and information technology while earning an associate degree from Harold Washington College or Harper College.

Gov. John Hickenlooper of Colorado wants to make apprenticeships ubiquitous in high schools around his state. Later this year, backed by \$9.5 million from Bloomberg Philanthropies and JPMorgan Chase, Colorado will begin offering hands-on training, starting in high school, in financial services, information technology and health care as well as manufacturing. The goal is to make the program available to some 20,000 students at all academic and income levels within the next decade.

“Apprenticeships can start with a job and end with a Ph.D.,” said Noel Ginsburg, who heads up the program and is president and founder of Intertech Plastics in Denver. The initiative was inspired by a visit that Mr. Ginsburg and dozens of politicians and business and education leaders made to Switzerland in 2015. Although German apprenticeships are often held up as the model, Mr. Ginsburg preferred the Swiss approach, which involves a wider range of fields.

In Switzerland, compulsory education ends after ninth grade, when students can choose either an academic or a vocational path. Between 20 percent and 30 percent of students choose the academic track, which focuses on the few professions, such as medicine and law, that require a university education; nearly 70 percent choose the vocational track, with programs for about 230 occupations.

Beginning in 10th grade, students rotate among employers, industry organizations and school for three to four years of training and mentoring. Learning

is hands-on, and they are paid. Switzerland's unemployment rate for the young is the lowest in Europe and about a quarter that of the United States'.

Here in the United States, most students are offered a choice between college or a dead end. The college-for-all movement, it seems, has closed off rather than opened up career options. For working-class voters who feel left out in this economy to be able to secure meaningful jobs, educational pathways must be expanded and legitimized — in the process redefining and broadening what is meant by higher education.

“The silver bullet comes by adding more training opportunities during and after high school,” said Dr. Carnevale. “And whatever you do with training, you need to call it college. You want to make people feel good about the path they choose.”

Jeffrey J. Selingo is author of “There Is Life After College: What Parents and Students Should Know About Navigating School to Prepare for the Jobs of Tomorrow.”

A version of this article appears in print on February 5, 2017, on Page ED10 of Education Life with the headline: Blue Collar Redefined.

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