Training Students to Outpace Automation

Schools near Detroit have reworked curriculum to include both technical and soft skills.

Emily DeRuy • Mar 10, 2017

Emily Jan / The Atlantic

DETROIT—Three young men in the back of a classroom at Henry Ford College stare intently at a machine that helps move panels along a conveyor belt. To the untrained eye, there doesn't appear to be much going on, at least initially.

But after several moments of careful inspection, the students exchange a few

ideas, make a couple of swift adjustments to the machine, and earn a nod of approval from an instructor standing nearby. The group has correctly identified an issue with a sensor that the teacher intentionally created to test the students' problem-solving prowess.

Students at Henry Ford College work together to troubleshoot a problem with a machine. (Emily Jan / The Atlantic)

Such scenes are becoming increasingly common at community colleges and technical schools here and across the country. As more jobs become automated, companies are looking for employees who can essentially manage the machines doing the work. Where an employee used to be responsible for, say, feeding a panel onto a conveyor belt, now that employee is increasingly expected to work with coworkers to solve any problems that arise when the machine doing the job malfunctions. That requires good communication, critical-thinking, and time-management skills, and schools that used to focus strictly on technical instruction like welding now find themselves adapting curriculum to include more of these so-called "soft skills."

The result, proponents hope, is a set of adaptable graduates with the ability to succeed across a range of industries—meaning a set of graduates who won't be left without options when the next recession hits. That's especially crucial here, in an area still struggling to rebound from the decline of the auto industry, and where educational attainment and salaries are lower, on average, than in the rest of the country. "I was sick of standing at a machine and doing the same thing all day," said Brad Grappin, 30, one of the students at Henry Ford tasked with troubleshooting the problem with the machine.

In another classroom at Henry Ford, 39-year-old Dionisio Velasco is practicing his welding skills under the watchful eye of his instructor, Kevin Ridge. He's been through auto-industry layoffs before, he said, and hopes going back to school will give him more job options (and more money) than he's had in the past. He's not only learning to weld, but also learning how to do higher-level welding inspections at the same time. Employers are looking

for workers who can do both, Ridge said, which has affected how he teaches. Now students at the college begin learning about inspections even before they learn to weld themselves, and students need more time in the school's hands-on labs than they used to so they can learn not only how to use certain tools, but why they work the way they do and how to fix them if they break. Students used to be grouped by ability, and the timeframe for moving forward was pretty rigid. Now, Ridge might have a classroom of students with varying abilities each working at his or her own pace.

Dionisio Velasco in the welding lab at Henry Ford College (Emily Jan / The Atlantic)

According to the Society for College and University Planning's new "Trends for Higher Education" report, which cites World Economic Forum (WEF) predictions, the world's workforce is set to lose some 7.1 million jobs between 2015 and 2020, in large part because of automation. But the WEF also anticipates a rise in demand for some specialties, like mechatronics, that didn't even exist a decade or two ago; it suggests that some 65 percent of

children in primary school today will ultimately hold jobs that don't exist yet.

"Learning to learn in the classroom is the new thing," said Gary Saganski, the head of academic relations at Henry Ford, who used to lead the school's industrial-technology division. That's something proponents of liberal-arts universities have for years said sets four-year, bachelor's-degree-granting schools apart from technical programs and community colleges like Henry Ford—that they help students build a foundation for a lifetime of learning and critical thinking. But as career-and-technical training evolves and more families scrutinize which four-year universities are worth the cost and what options will be available after graduation, some companies are looking for a blend of the two. For instance, some auto companies like Ford are putting engineers through technical courses for hands-on experience, Saganski said.

At community colleges like Henry Ford, "learning to learn in the classroom" means more emphasis on critical thinking and collaboration, and on demystifying the technology that powers today's manufacturing systems. Schools today are more willing to involve employers in conversations about what skills should and shouldn't be taught from the outset, Saganski said, and many employers are willing to engage because they're more likely to get well-rounded workers who won't need to be retrained in the future.

Dionisio Velasco and Christopher Booker work on their projects in the welding lab at Henry Ford College. (Emily Jan / The Atlantic)

Saganski doesn't have anything against four-year degrees, and says many employers eventually want their workers to earn them. But he thinks giving students hands-on experience and technical training ultimately makes students more marketable.

About 15 miles northeast of Detroit at Macomb Community College, Gerry Naranjo is learning that lesson firsthand—the hard way. Naranjo is a 56-year-old with an MBA and management experience. But he's back in school learning the ins and outs of automation and robotics surrounded by students who are decades younger and less educated: After he was laid off last summer, his lack of technical experience and age made him easy for hiring managers to overlook. "I needed to re-establish relevance," he said during an interview with other students at Macomb. "I look at this as a retooling." Now, some potential employers even tell him he'd be better off removing the MBA

from his resume; they're looking for people with technical skills, and an MBA doesn't necessarily signal that someone has the right training.

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On the other end of the spectrum is Nick Papas, one of Naranjo's classmates. At 19, Papas is hoping to avoid some of the challenges Naranjo's faced by taking manufacturing classes and earning several certifications early on that he hopes will make his resume stand out. Besides, he said, he's "deathly afraid of taking out student loans" to pay for a more costly four-year degree.

Gerry Naranjo, center, works with classmates at Macomb Community College. (Emily Jan / The Atlantic)

As at Henry Ford, instructors at Macomb say they've changed the curriculum close to a dozen times in the last four years in response to feedback from employers who say they want people with both technical and soft skills. The school didn't used to spend time formally teaching students how to work in teams or communicate with clients; now teachers do. And where the school used to prepare students for particular sectors, now students learn skills that are applicable in the auto industry but also in defense or food processing. "You actually get real-world skills," said James Bevel, a 41-year-old Macomb student who worked with radar weapons during eight years in the Navy. "It's immersing you in the fire instead of theory, theory, theory."

Of course, there are challenges. Sometimes students leave before they've completed a program because they get a job offer that's too good to pass up, which can hurt schools' completion rates. Encouraging women to enroll has been difficult. And as technology evolves, labs and curriculum need to be updated, which can be costly. Perhaps one of the biggest issues is that families (the parents of young students in particular) who feel that the technical education they received a generation ago didn't serve them well as

the auto industry declined are wary about setting their kids up for failure. So colleges have increased recruitment efforts and expanded dual-enrollment programs to give high-school students a taste of more modern, well-rounded courses. With college costs rising and jobs that require some higher education but not a full four-year degree opening up, it's a pitch that is getting easier to sell in some places.

Emily Jan contributed reporting. Nshira Turkson contributed research.

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