A New Kind of Jobs Program for Middle America

Code schools and boot camps that teach computer programming skills prove they can rapidly retrain American workers for the 21st century

When Alex Mathis heard there was a coding school in Akron, Ohio, not far from where he lives, he thought its claim—that he could become a gainfully employed computer programmer after a three-month training course—sounded suspicious.

He'd never taken a computer-programming class in his life, but by the time he finished an intensive 12-week, $13,750 program at the Software Guild, he had a job with Buckeye Mountain, a maker of rail freight software. "If you told me several years ago that I was going to be a computer programmer and working for a software company I wouldn't have believed you," says Mr. Mathis, who also got a 10% pay bump over his last job, as a shipping manager for a printing company.

Across the U.S., change is coming for the ecosystem of employers, educational institutions and job-seekers who confront the increasingly software-driven nature of work. A potent combination—a yawning skills gap, stagnant middle-class wages and diminished career prospects for millennials—is bringing about a rapid shift in the labor market for coders and other technical professionals.

Riding into the breach are "code schools," a kind of vocational training that rams students through intense 12-week crash courses in precisely the software-development skills employers need.

Code schools aren't the place to go if you want to be a "rock star" at Google or Facebook. These are designed to turn out junior developers, or "apprentices" as they're known at Software Guild, which currently has 16 instructors and 148 students split between in-person and online programs. Students learn just enough to be dropped into teams of more experienced coders and continue their education at a company, even as they draw a competitive full-time salary. They aren't building the high-flying startups; most are simply translating business processes into code, transforming data or helping maintain and update legacy systems.

The number of code-school graduates is roughly doubling every year, says Liz Eggleston of Course Report, one of the few organizations that track these schools. In 2016, there were nearly 18,000 graduates of code schools, a healthy number when you compare it with the nearly 60,000 students who graduated with computer-science degrees from U.S. colleges and universities in 2015. There are currently 91 full-time coding "boot camps" in the U.S. spread across 71 cities, up from just a handful in 2012, when the phenomenon began in tech hotspots like San Francisco and New York.

For-profit education has a justifiably tarnished reputation, and last year California forced one code school to suspend operations. Many other code schools are paying independent auditors to verify their claims about job-placement rates and salaries. Collectively, they're working on a nationwide system to provide transparency into what students can expect from a three-month coding program, says Rick O'Donnell, the founder of Skills Fund, which lends students money for tuition. Average tuition is $11,450, according to Course Report.

Three months after graduating, 93% of the alumni of code school Zip Code Wilmington, in Delaware, had found jobs that required their coding skills, says the head of school, Melanie Augustin. The school has a 12% acceptance rate.

One of those graduates is Heron Ziegel. Six months ago, Ms. Ziegel, then 23 years old, had no degree, had never held a full-time job and was struggling as a

freelance graphic designer. After hearing about the school, she applied to Zip Code, where part of the screening process is a brief JavaScript tutorial aimed at people with no experience. She found she enjoyed it, and that was the moment it clicked for her: This might be a good career switch.

Today, she is an assistant vice president at TD Bank, working as an IT data analyst. "I can honestly say that six months ago I had no idea I would be in this industry," Ms. Ziegel says.

TD Bank has a special relationship with Zip Code: Along with other firms, including other banks, TD Bank consults on what the school should teach. In a way, not-for-profit Zip Code is an outsourced training academy for its partners.

Code school isn't for everyone. Programming requires focus and a knack for problem solving. Typically, boot camps admit only a fraction of those who apply, but they welcome nontraditional applicants. On average, 24% of people who get into code schools don't have bachelor's degrees, according to Course Report. The average age is 30, and 43% are women, compared with fewer than 20% of students in traditional computer-science programs.

The difference between someone with a computer-science degree and someone trained to sling code is the difference between an electrical engineer and an electrician, says Eric Wise, founder and chief academic officer of Akron's Software Guild. His school distinguishes itself by teaching programming

languages that are out of fashion with startups but in wide use at banks, insurance companies and manufacturers.

As software continues to eat the world, what health care, banking, manufacturing and heavy industry seek are workaday coders who can digitize outdated business processes. Nine out of 10 open coding jobs are outside Silicon Valley, according to jobs site Indeed.

People like Mr. Mathis in Ohio illustrate this: His job requires that he create software enabling workers to inspect shipping containers, a process that currently involves a great deal of paper. This doesn't require a programming wizard: In fact, it benefits from mid-career switchers with nondigital work experience.

For code schools to have a meaningful impact on the overall labor market, they will have to continue their rapid pace of expansion. So far, they seem able to draw plenty of instructors from the ranks of their own graduates, and investors are pouring money into them.

The U.S. Bureau of Labor Statistics posits there will be a shortfall of 1 million computer-related workers by 2020. The bureau's most recent report asserts that the number of jobs for software developers will grow much faster than average in the next 10 years.

U.S. manufacturers have spent decades developing guilds, vocational training programs and in-house retraining efforts to keep workers up to date, says David Sattler, founder of contract manufacturer Sattler Machine Products in northeast Ohio. What's happening now with code schools is very much the reinvention of that system, but for professionals who work with bits, rather than widgets.