

July 9, 2011

# Tough Calculus as Technical Schools Face Deep Cuts

By [MOTOKO RICH](#) (The New York Times)

GREENSBORO, N.C. - Despite a competitive economy in which success increasingly depends on obtaining a college degree, one in four students in this country does not even finish high school in the usual four years.

Matthew Kelly was in danger of becoming one of them.

Tests showed he had a high intellect, but Mr. Kelly regularly skipped homework and was barely passing some of his classes in his early years of high school. He was living in a motel part of the time and both his parents were out of work. His mother, a former nurse, feared that Matthew had so little interest he would drop out without graduating.

Then his guidance counselor suggested he take some courses at a nearby vocational academy for his junior year. For the first time, the sloe-eyed teenager excelled, earning A's and B's in subjects like auto repair, electronics and metals technology. "When it comes to practicality, I can do stuff really well," said Mr. Kelly, now 19.

So well, that he has earned a scholarship to attend a [community college](#) this fall. He even talks of pursuing a bachelor's degree in engineering some day, and opening his own business.

Now, federal funding to provide such vocational and technical education is at risk. President Obama has instead made it a priority to raise overall academic standards and college graduation rates, and aims to shrink the small amount of federal spending for vocational training in public high schools and community colleges. That aid comes primarily in the form of Perkins grants to states.

The administration has proposed [a 20 percent reduction](#) in its fiscal 2012 budget for career and technical education, to a little more than \$1 billion, even as it seeks to increase overall education funding by 11 percent. The only real alternative to public schools for career training is profit-making colleges and trade schools, many of which have been harshly criticized for sending students deeply into debt without improving their job prospects. A little more than one in 10 students in higher education attend a profit-making institution.

Proponents of career education in public high schools and community colleges point to apparent successes like Mr. Kelly and other research to demonstrate that their courses serve a group of students at most risk of being left behind. Without high school, much less college, many young people - particularly men and members of minority groups - end up doing low-skill work, relying on their youth and brawn. Those types of jobs were slashed during the downturn, and job prospects often fade altogether as workers age.

In European countries like Germany, Denmark and Switzerland, vocational programs have long been viable choices for a significant portion of teenagers. Yet in the United States, technical courses have often been viewed as the ugly stepchildren of education, backwaters for underachieving or difficult students.

In a speech to the [National Association](#) of State Directors of Career Technical Education Consortium in April, Secretary of Education Arne Duncan said that "[at a time](#) when local, state and federal governments are all facing tremendous budget pressure" advocates for vocationally oriented education "must make a compelling case for continued funding."

In his camp are those who say students need to concentrate on basics like math, literacy and history to prepare for college and the jobs of the future, rather than learning a narrow technical craft. In this view, bright students like Mr. Kelly, who have the potential to do college-level work, should be put on that path, or schools will have failed them.

What's more, those in favor of academic reform worry that minority and low-income students will be automatically channeled into vocational courses. A rigorous academic curriculum, they say, is the best way to help all workers remain flexible, climb career ladders and prepare for a wider spectrum of jobs.

Recognizing that employment and income have expanded for those with college degrees, the president has said he wants America to produce the highest proportion of college graduates in the world by 2020.

Last year, [fewer than](#) a third of all 25- to 29-year-olds in the United States had earned a bachelor's degree or higher. Advocates say the most compelling case for vocational education is that it keeps students interested in school at all. According to data from the Department of Education, about 75 percent of students who start public high school graduate within four or five years. But more than 90 percent of those who concentrate in

career-oriented courses, a definition that varies by state, do so, according to statistics compiled by the Office of Vocational and Adult Education. (Eventually, after more years of school or passing a General Educational Development test, about 87 percent of all students complete high school.)

Strong vocational programs that start in high school, advocates say, can help students make the leap to one- or two-year credentials that are increasingly the ticket out of low-skilled, lower-paying jobs. In fact, 27 percent of people who get a vocational license or certificate after high school, whether at a community college or a profit-making institution, earn more than the average for those with a bachelor's degree, [according to](#) the Center on Education and the Workforce at Georgetown University.

Career and technical education "can prepare you for jobs in which you're going to earn a very solid middle-class income," said William C. Symonds, director of the Pathways to Prosperity Project at the Harvard Graduate School of Education. "That's not to say that you're going to be a hedge fund manager making millions a year, but you will prepare for jobs that will pay more than a living wage."

Mr. Kelly will transfer four vocational credits from Weaver Academy, a public high school in Greensboro that draws students from 15 traditional high schools around the county, to Guilford Technical Community College this fall. He figures that with a two-year degree in computer-integrated machining, he can qualify for jobs operating the sophisticated machines that manufacturers use to make metal parts for the aerospace, automotive, defense and medical industries.

In the Greensboro area, entry-level machining jobs pay \$14 to \$20 an hour - roughly \$30,000 to \$42,000 a year. To Mr. Kelly, whose father, Farrel Kelly, lost his job five years ago repairing textile equipment, that sounds like a healthy wage.

If he can work part-time in college, the younger Mr. Kelly, who lives in a run-down bungalow with his mother and a roommate, is hoping to buy a car and hire an exterminator to eliminate the cockroaches that skitter around their living room floor.

"Depending on which job I get and how well I advance in the company, you can definitely live well," he said. Mr. Kelly recently met a fellow alumnus of Weaver who now works as a machinist at a local aeronautical repair company and was impressed to learn that at age 21, he has already signed a contract to buy a house.

In industries like manufacturing and health care, employers are calling for better career and technical education because they cannot find qualified candidates to fill their openings for machinists, welders and certain categories of nurses, among other jobs. As baby boomers retire and the economy picks up, analysts also expect more demand for medical technicians, dental hygienists and law enforcement workers.

Pushing all young people toward a bachelor's degree could be misguided, some employers say, depriving certain industries of much-needed future workers. "I think there is a stigma in society that says if you don't get a four-year degree you have not achieved," said Matthew Edwards, manager of human resources at Machine Specialties in Whitsett, N.C., which makes precision parts for the aerospace and defense industries and is desperate to hire 10 new machinists. "And I don't think that is true. There are not enough technical people in the workforce for us to grow."

Others question whether the skills shortage is simply a matter of employers not paying enough for qualified workers. In fact, the skills that employers most frequently say are in shortest supply are critical thinking, the ability to work in teams and communication, not specialized training.

"Our clients tell us 'I've found somebody who is an electrician or a technician, but they don't have a global mindset or can't work with people in different cultures,' " said Mara E. Swan, executive vice president for global strategy and talent at ManpowerGroup, a job placement firm. "They can't think beyond what I tell them to do."

Even as experts debate how to teach such intangible skills, more jobs demand much higher math and reading proficiency than in the past.

In manufacturing, for example, work once performed on low-skilled assembly lines has mostly moved offshore or been automated. The jobs that remain require workers who can interpret blueprints, program computerized machinery and solve problems on the fly. According to [a report](#) by the Pioneer Institute, a public policy group, manuals for auto mechanics, plumbers and those who repair appliances are written "up to a Grade 14 reading level."

Yet many young people are not able to compete for these jobs. Nearly two-thirds of students who enter a community college within a few years of high school graduation require remedial math and reading classes, according to the American Association of Community Colleges.

Students who have a hard time grasping academic concepts in a traditional lecture or textbook may learn better in a practical, hands-on setting.

In an analysis of testing data from Massachusetts, Alison L. Fraser, author of the Pioneer Institute study of 27 regional vocational and technical education high schools in the state, found that vocational students vastly improved their passing rates on English and math standardized tests between 2001 and 2007, a period in which the schools focused on integrating academic instruction into technical classes. In fact, by 2007, the vocational students were actually passing at higher rates than students in the rest of the state.

In [another study](#) of 200 teachers and 3,000 students in nine states, James R. Stone III, director of the National Research Center for Career & Technical Education at the University of Louisville, similarly found that high school students whose teachers were given specific training in how to incorporate academic concepts into vocational classes scored, on average, 17 to 21 percentile points higher on standardized math tests than students in classes where vocational teachers had not been trained in academic integration.

One group of schools consistently held up as a model are career academies that integrate academics into occupationally-themed courses. Graduates of such academies earned, on average, 11 percent more a year than students from similar backgrounds who graduated from traditional high schools, according to [a study](#) by MDRC, formerly the Manpower Demonstration Research Corporation. The Obama administration says that overall, data about career and technical education is mixed. There are "islands of excellence," said Brenda Dann-Messier, assistant secretary for vocational and adult education, but there is still "uneven quality around the country."

Weaver Academy serves about 700 students a year in everything from heating and air conditioning to computer graphics in north central North Carolina. As furniture and textile production have left the area for Asia, the county has aggressively wooed new industries. Most prominently, Honda Aircraft broke ground in 2007 on its headquarters and a manufacturing plant in Greensboro. The company plans to hire as many as 350 people within a year.

Still, Gene Holder, head of Weaver's metals technology department, has struggled at times to entice students to his classes. "People think that blue-collar jobs are bad," said

Mr. Holder, an oak tree of a man with a goatee and aviator glasses who spent 17 years in manufacturing before teaching. "But it is no longer the dirty, wet sweatshop-type thing. You have to really have something going on up here," he added, tapping his head.

Mr. Kelly initially signed up for an automotive mechanics class at Weaver, and added a metals manufacturing class with Mr. Holder simply to fill out his schedule. Drilling small holes at tolerances within one-thousandth of an inch and punching in complex programming codes held his attention more than classroom lectures ever did. "You have to focus on it," he said.

Mr. Kelly completed two industry certifications from the National Institute for Metalworking Skills, a trade group, before graduating in June. "It was a miracle we got him through high school," said his mother, Cynthia Kelly.

Ordinarily, a student with Mr. Kelly's aptitude would have been guided down a more academic track. His guidance counselor, Susan Schirick, said she was grateful that he had found another path, though it was bittersweet.

"Matt came in with zero motivation - let's face it," Ms. Schirick said. The technical courses, she added, were "a route to get him to see his future."