

FOREWORD

Ask any group of high school teachers, and they will report that the most frequently heard question in their classrooms is, “When are we ever gonna use this?” In a traditional college prep program, the honest answer is usually, “Maybe when you get to the university.” But in the real world? Depending on the class, maybe not at all.

However, in high-quality Career and Technical Education (CTE) programs, that question is moot. Students learn skills that will help them prepare for stable careers and success in a modern, global, and competitive economy. A student who wants a future in architecture doesn’t question his first drafting course in high school. One interested in aerospace sees value in her introduction to engineering design class. An aspiring medical professional is enthusiastic, not indifferent, about high school anatomy.

Unfortunately for millions of American students, CTE is not a meaningful part of their high school experience. Instead, they are shuffled through large, bureaucratized schools that do not adequately prepare them for anything, be it college, career, or both.

In large part, this is because CTE has been chronically neglected by American education leaders and policymakers.

Many CTE advocates suspect that it’s because of the damaged “brand” of vocational education. And it’s damaged for a reason, as there was a time when the “vo-tech” track was a pathway to nowhere. “Tracking,” as practiced in the twentieth century, was pernicious. It sent a lot of kids—especially low-income and minority students—into low-paying, menial jobs, or worse.

Yet America is an anomaly. In most industrialized countries—nearly all of which outperform us on measures of academic achievement, such as PISA and TIMSS—students begin preparing for a career while still in high school. Around the world, CTE is not a track away from a successful adulthood, but rather a path towards it.

American students face a double-whammy: Not only do they lack access to high-quality secondary CTE, but then they are subject to a “bachelor’s degree or bust” mentality. And many do bust, dropping out of college with no degree, no work skills, no work experience, and a fair amount of debt. That’s a terrible way to begin adult life. We owe it to America’s students to prepare them for whatever comes after high school, not just academic programs at four-year universities.

Despite its checkered past, modern CTE—often called “new vocationalism”—is a far cry from vo-tech. No longer isolated “shop” classes for students showing little future promise, CTE coursework is now strategic and sequenced. It entails skill building for careers in fields like information technology, health sciences, and advanced manufacturing. Secondary CTE is meant to be a coherent pathway, started in high school, into authentic technical education options, and credentials, at the postsecondary level.

Why don't we see more communities embracing high-quality CTE? Why are students nationwide taking fewer CTE courses today instead of more? Would it help if policymakers, educators, parents, and kids could see that CTE today isn't a dead-end track?

That's where this study comes in. We wanted to know whether the students who participated in CTE—and especially those “concentrating” by taking a sequence of three or more courses aligned to a career in a specific industry—were achieving better outcomes than their peers. Were they more likely to graduate from high school? Enroll in postsecondary education? And, perhaps most importantly, be employed and earn higher wages?

To find out, we enlisted Shaun M. Dougherty, assistant professor of educational policy and leadership at the University of Connecticut's Neag School of Education, who has previously studied high school CTE in Massachusetts and New York City. For this study, he coordinated with the Arkansas Research Center to access and analyze their truly remarkable database, which combines secondary, postsecondary, and labor market information. He designed and executed a rigorous analytic strategy that uses three different statistical approaches, giving us great confidence in his findings.

And what are they?

Arkansas students with greater exposure to CTE are more likely to graduate, enroll in a two-year college, be employed, and have higher wages. Furthermore, those students are just as likely to pursue a four-year degree as their peers. In addition, students who “concentrate” their CTE coursework are more likely to graduate high school by 21 percentage points compared to otherwise similar students—a truly staggering number. Concentration has positive links with the other outcomes as well. Moreover, the results of this study suggest that CTE provides the greatest boost to the kids who may need it most—boys, and students from low-income families.

And the good news is that CTE does not have to be super expensive and highly exclusive in order to have positive effects. The form of CTE we studied in Arkansas is CTE at its most egalitarian and scalable: most students took courses at their comprehensive high school, and some did so at regional technical centers. And it worked.

Overall, this study adds to the growing body of evidence on the impact of high school CTE. Policymakers in other states should heed Arkansas's example by increasing their investment in secondary CTE that is aligned to the demands of the local labor market. It's also high time to reauthorize the Perkins Act and increase federal investment in this area. The scars of the recession have faded, but they haven't disappeared. Connecting more young people with available opportunities by giving them the skills employers are seeking should be a national priority.

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EXECUTIVE SUMMARY

Until the late 1990s, “vocational education” in traditional trades such as carpentry, cosmetology, and auto mechanics was often the presumptive high school placement for low-performing students considered ill-suited for college. However, in the past two decades, policymakers and educators have reconsidered what is now referred to as “Career and Technical Education” (CTE). Done right, secondary CTE provides preparation and skill building for careers in fields such as information technology, health services, and advanced manufacturing, in which many positions require a postsecondary education. While some high school CTE students do enter the workforce without additional training, many secondary CTE programs feed participants into professional certification or associate degree programs at two- or four-year colleges. The goal of today’s CTE is simple: to connect students with growing industries in the American economy and to give them the skills and training required for long-term success.

Unfortunately, little is known about this “new vocationalism.” This study uses a rich set of data from the Arkansas Research Center (ARC) to follow three cohorts—more than 100,000 students—from eighth grade, through high school, and into college and/or the workforce. It asks:

1. Which students are taking CTE courses? Which courses—and how many of them—are they taking?
2. Does greater exposure to CTE improve education and employment outcomes (high school graduation, college enrollment, employment status, and wages)?
3. Does CTE “concentration” (taking a sequence of three or more courses in an occupationally aligned “program of study”) have benefits for students? Do certain students benefit more than others?

Arkansas is a compelling case study because it recently overhauled its policies to improve career readiness and align CTE programs with the labor market. Further, beginning with the class of 2014, all high school students must take six units of “career focus” coursework to graduate, which they can fulfill with CTE. Arkansas is one of the few states that has linked K-12, postsecondary, and workforce data for long enough so that questions about the efficacy of secondary CTE can be addressed.

FINDINGS

1. MOST STUDENTS IN ARKANSAS TAKE CTE, WITH LIMITED EVIDENCE OF “TRACKING.”

Students took an average of 4.9 CTE courses in high school. More specifically, 89 percent took at least one CTE class; only 30 percent took two classes or fewer; 39 percent took between three and six, and 31 percent took seven or more. Exposure to CTE coursework differs slightly by race, disability status, income, and gender. In particular, white students, students with disabilities, and female students are slightly overrepresented among students taking seven or more courses; Latino students are underrepresented. It does not appear, however, that higher-achieving students are steered away from CTE. For example, although low achievers (as defined by eighth grade math test scores) are slightly overrepresented in the seven-or-more courses category, so are middle achievers. And high achievers are not taking fewer courses than other students.

2. WHITE AND FEMALE STUDENTS ARE MORE LIKELY TO CONCENTRATE, AND SOME CONCENTRATIONS ARE MORE OR LESS POPULAR DEPENDING ON A STUDENT’S GENDER, RACE, INCOME LEVEL, AND DISABILITY STATUS.

Nearly 30 percent of all students choose to “concentrate” by earning three or more credits in a formal, coordinated program of study. The most popular concentrations are business, family and consumer sciences, and agriculture. Compared to the general student population, “concentrators” are slightly more likely to be white or female and slightly less likely to be Latino. Male students are overrepresented in concentrations related to agriculture, architecture and construction, manufacturing, STEM, and transportation and logistics. Female students are overrepresented in concentrations related to education, health sciences, and human services.

Students with disabilities are neither overrepresented nor underrepresented among concentrators as a group—but they concentrate in greater numbers in manufacturing; and

transportation and logistics (and are underrepresented in finance and health sciences, among others). Likewise, students who are free or reduced-price lunch eligible are proportionally represented among all concentrators, but more frequently concentrate in government and public administration, transportation and logistics, and law and public safety. They are particularly underrepresented in education, STEM, and arts and communications.

3. THE MORE CTE COURSES STUDENTS TAKE, THE BETTER THEIR EDUCATION AND LABOR MARKET OUTCOMES.

In general, taking just one additional CTE course above the average increases a student’s probability of graduating from high school by 3.2 percentage points and of enrolling in a two-year college the following year by 0.6 percentage points. It also increases a student’s probability of being employed the year after graduation by 1.5 percentage points and boosts his or her expected quarterly wage that year by \$28 (or roughly 3 percent). Dual enrollment—earning college credit while still in high school—magnifies the impact of an additional CTE course by doubling the probability that a student will enroll in a two-year college the year after graduation. All of these differences are statistically significant.

4. STUDENTS WHO CONCENTRATE SEE ADDITIONAL BENEFITS, ESPECIALLY WHEN IT COMES TO HIGH SCHOOL GRADUATION.

Concentrators are 21 percentage points more likely to graduate from high school than otherwise identical students (with similar demographics, eighth grade test scores, and number of CTE courses taken) who do not concentrate. In the year after high school, concentrators are 0.9 percentage points more likely to be employed (with average quarterly wages that are \$45 higher), and 1.3 percentage points more likely to be enrolled in a two-year college, than similar non-concentrators.¹

5. MALE AND LOW-INCOME STUDENTS SEE THE LARGEST BENEFITS TO CONCENTRATING.

Students of both genders are more likely to graduate from high school if they concentrate, but boys see a bigger boost. Compared to similar male non-concentrators, they are 23 percentage points more likely to graduate, while female concentrators are 19 percentage points more likely to graduate than similar females who do not concentrate. All else equal, concentrating gives male students a far greater wage benefit than it does female students (\$89 more per quarter versus no significant benefit). Low-income concentrators are 25 percentage points more likely to graduate than low-income non-concentrators, while higher-income concentrators are only 17 percentage points more likely to graduate than their non-concentrator peers.

RECOMMENDATIONS

The results suggest that policymakers and education leaders nationwide should **invest more heavily (and strategically) in high school CTE**. Doing so could mean mirroring much of what is already occurring in Arkansas:

1. Examine state labor market projections to identify high-growth industries;
2. Offer CTE courses aligned to skills and industry-recognized credentials in these fields, and encourage (or require) high school students to take them;
3. Encourage (or require) students taking multiple CTE courses to concentrate, rather than enrolling haphazardly; and
4. Support and encourage dual enrollment and make credits “stackable” from high school into college, so that high school CTE courses count toward specific postsecondary credentials.

Finally, although most of its funding comes from state and local sources, throughout its history CTE has been shaped by federal policy. As such, the results should encourage federal policymakers to thoughtfully reauthorize the Perkins Act as soon as possible. High school CTE improves outcomes for students seeking to start their careers quickly, but does not hinder those hoping to go to a four-year college. While it is likely beneficial to students in myriad forms—including small, focused academies or selective whole-school programs—this study finds a positive impact of CTE at its most egalitarian: nine out of ten CTE students took those classes only at their comprehensive high school, and the remaining ten percent took CTE at a regional technical center that serves all students in a twenty-five-mile radius. It should therefore be a national priority to **increase federal support for high-quality, labor-market-aligned programs that are available and appealing to all students**.