



Career and Technical Education's Role in American Competitiveness

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American excellence and prosperity depend on developing a productive and adaptable workforce that is competitive in the global economy. Unfortunately, American competitiveness is no longer assured. Since 2008, the United States has slipped in the World Economic Forum's list of most globally competitive nations, down to number seven in 2012.

An educated workforce provides direct benefits to American employers, strengthening the economy through productivity and innovation. In addition, the public receives a return of two to three times what it invests in education, according to the Organization for Economic Cooperation and Development (OECD).

Despite this investment, our educational attainment has lagged in recent years. For instance, the OECD currently ranks the U.S. 14th in the world in the educational attainment of 25- to 34-year-olds.

The academic performance of U.S. students is also a concern. In the 2009 Program for International Student Assessment exam, high school students in the U.S. lagged behind 12 industrialized nations in science and 17 in mathematics. This poor performance is troubling, especially when other nations such as China are developing a workforce versed in science, technology, engineering and mathematics (STEM).

But college and career readiness is not based on academic skills alone. Technical and employability skills are vital, too—and all three are lacking, according to industry. In a Society for Human Resource Management (SHRM) poll of employers, more than half reported they were unable to recruit workers for open positions, and human resource professionals predict a lack of workforce readiness will impact employers for years to come.

Career and technical education (CTE) plays a major role in strengthening the U.S. workforce, and thereby American competitiveness, by readying

students for both college and careers through the integration of academic, technical and employability skills; by partnering with business and industry; and by emphasizing the attainment of meaningful credentials.

CTE Provides College Readiness

High-quality CTE prepares students to be college-ready by engaging them in school, which lowers their risk of dropping out, and by integrating academics with technical skills to improve student performance.

CTE programs help students stay motivated by connecting education to careers. Data shows that relevance is a key element in dropout prevention: more than 80 percent of dropouts say relevant, real-world learning opportunities would have kept them in high school, according to the 2006 *Silent Epidemic* report. CTE can strongly impact educational persistence, as illustrated by researchers such as Kulik; Grasso and Shea; and Plank, DeLuca and Estacion, who found that a ratio of one CTE course to two academic courses minimized a student's dropout risk.

Integrating academic and technical skills and content, with a focus on real-world problem solving, is an important way that CTE engages students and improves their academic performance. For instance, in Arizona, where academic content has been made explicit in CTE courses, CTE students routinely outperform the general high school population on Arizona's Instrument to Measure Standards (AIMS) high-stakes academic tests. Other programs that integrate academics with CTE include the National Research Center for Career and Technical Education's Math-in-CTE model. Research has demonstrated that students who received the enhanced Math-in-CTE instruction scored significantly higher on standardized math tests than students who did not.



In addition, in many states CTE courses can meet academic credit requirements for graduation or count for both academic and elective CTE credit.

CTE Leads to Meaningful Degrees and Other Credentials

CTE provides pathways to the attainment of meaningful, stackable credentials, including industry-recognized certifications as well as associate and bachelor's degrees and postsecondary certificates.

Postsecondary education is key to developing the talent of the American workforce and to helping individuals achieve career and life success. But postsecondary education that leads to high-wage, high-growth and high-demand careers is no longer synonymous with a four-year bachelor's degree and the financial output that it entails. For instance, occupations requiring an associate degree are projected to grow faster than those requiring a baccalaureate degree, according to the Bureau of Labor Statistics. In addition, the Georgetown University Center on Education and the Workforce predicts that by 2018 the U.S. will need at least 4.7 million new workers with postsecondary certificates.

CTE supports students' postsecondary attainment through its Programs of Study framework, which aims to seamlessly link secondary and postsecondary education and lead to a high-quality credential. In addition, CTE programs enable students of all ages to acquire stackable credentials, including degrees, certificates and industry-recognized certifications, which build on one another and are often desired or required by employers. For example, community colleges are partnering with the manufacturing industry to implement stackable credentials through the National Association of Manufacturers-endorsed Manufacturing Skills Certification System.

In some instances, CTE programs foster postsecondary attainment while students are still in high school. For instance, at North Carolina's Wake Early College of Health and Sciences, which partners with Wake Technical Community College and WakeMed Health and Hospitals, students can graduate within five years with a high school diploma and an associate degree or transferable credit. They also have the opportunity to earn a postsecondary certificate in a subject such as phlebotomy. College credits are tuition free, transferable to the University of North Carolina system and accepted by many other postsecondary institutions.

CTE Produces Career Readiness

CTE provides students with not only the academic and technical skills needed for educational attainment; it also helps students develop employability skills crucial for the workplace. These three skill sets form

the foundation of career readiness and are often developed through cooperation with industry.

SHRM and other organizations have extensively documented employer demand for aptitude in critical thinking, problem solving, communication, collaboration and leadership. CTE is uniquely suited to developing these skills in students through in-class projects; career and technical student organization competitions, leadership opportunities and service-learning activities; student-led businesses; and work-based learning.

In addition, CTE programs partner with businesses to equip students with the skills needed by industry and often by specific employers who are vital to the local or regional economy. Features of business-CTE partnerships include advisory committee participation, curriculum development and mentorship and internship opportunities.

With its emphasis on academic, technical and employability skills leading to stackable, meaningful credentials, CTE prepares students for jobs at the forefront of the global economy, including the majority of the fastest-growing occupations identified in the U.S. Department of Labor's 2012-2013 *Occupational Outlook Handbook*, and jobs in all 14 sectors identified by the Department of Labor's High Growth Job Training Initiative.

An example of a CTE program that integrates college and career readiness, prepares students for high-tech, high-wage fields and effectively utilizes business partnerships is the Academy for Mathematics, Science and Engineering, located at Morris Hills High School, New Jersey, and part of the Morris County School of Technology. This four-year program of rigorous academic and technical content incorporates project-based coursework, culminating in a 100-hour senior internship experience. Current industry partners include Langan Engineering and Environmental Services and the Novartis Pharmaceuticals Corporation. The school also offers opportunities to earn college credit from the New Jersey Institute of Technology.

Conclusion

The United States is only as strong as its workforce. CTE plays a vital role in developing a well-educated workforce that supports American productivity and innovation through its emphasis on college and career readiness, including academic, technical and employability skills; its partnerships with industry; and its focus on meaningful postsecondary attainment that leads to careers that drive the global economy.

