

## ISSUE BRIEF

# The Need for Career and Technical Education

### The Growing Concern

In today's economy, the skills required of employees have changed. Global competition and technological advancements are putting an increased premium on advanced technical skills and higher education.<sup>1</sup> Economists predict that by 2022, machines will displace more than 75 million jobs, while the economy will generate 133 million new jobs that demand technological skills.

Data also show that a high school diploma is no longer enough to secure employment in many fields. The most current data from the Bureau of Labor Statistics indicate that 68 percent of U.S. jobs require education beyond high school.<sup>2</sup> Unfortunately, recent data suggest that most students are not obtaining even the most basic skills and knowledge needed for success in college or careers. According to the 2015 National Assessment of Educational Progress (NAEP), 63 percent of 12th grade students scored below the proficient level in reading achievement, and 75 percent scored below the basic level in mathematics.<sup>3</sup> National statistics show that only 84.6 percent of students graduate from high school in four years, and approximately one in 20 students drop out,<sup>4</sup> while at the post-secondary level, fewer than 40 percent of community college students earn an associate degree within six years of enrollment.<sup>5</sup> Only 40 percent of 27-year-olds obtain an associate or bachelor's degree.<sup>6</sup>

Failure to obtain an advanced education has profound financial consequences for students. Adults over the age of 25 with at least an associate degree earned 18 percent more than those with only a high school diploma or equivalent and 56 percent more than those without a high school diploma. Adults with an associate degree also have lower unemployment rates (2.8 percent) than those with just a high school diploma (4.1 percent) or less than a high school diploma (5.6 percent).<sup>7</sup>

Even when adults obtain education credentials, they may not be prepared for jobs. A 2018 survey found that 45 percent of employers couldn't find employees who had the necessary skills to fill basic job requirements—a 12-year high.<sup>8</sup> However, data from the National Center for Education Statistics and the Association for Career and Technical Education indicate that completing high school Career and Technical Education courses can positively impact student retention, graduation, and post-secondary education outcomes,<sup>9</sup> as well as support meeting employers' needs for skilled workers.<sup>10</sup>

## An Effective Approach

Career and Technical Education (CTE) programs have emerged as a vehicle to better prepare students for college, careers, and beyond. Based on the most current data available, it is estimated that 7 million secondary school students are taking CTE courses. The reauthorization of the Carl D. Perkins Careers and Technical Education Act has created more opportunity, with \$1.2 billion in funding for CTE programming.

A growing body of literature documents the positive impact CTE can have on student engagement, academic outcomes, and economic prospects.

### Improved engagement

Research shows that CTE courses can increase students' interest in school and keep them engaged past high school.

- A 2012 longitudinal study shows that CTE courses can improve engagement and achievement by making curricula relevant to students.<sup>14</sup>

### Improved academic outcomes

Studies indicate that CTE courses can improve grade point averages and student performance on standardized tests.

- A 2010 literature review of career academies compared the academic outcomes of students who took CTE courses to students who did not. The results showed that students enrolled in CTE courses had higher grades.<sup>15</sup>
- A 2010 randomized study revealed that students enrolled in literacy-enhanced CTE classes performed significantly better than control students on the Gates-MacGinitie Vocabulary, Reading, and Comprehension tests.<sup>16</sup>
- A 2008 randomized study found that students enrolled in mathematics-enhanced CTE classes performed significantly better than control group students on two tests of mathematical ability (TerraNova and Accuplacer®).<sup>17</sup>

Research also demonstrates the impact of CTE on reducing dropout rates and increasing graduation rates.

- A 2018 study found that participation in a high-quality CTE program boosts the probability of on-time graduation from high school by 7 to 10 percentage points, and that participation in CTE programs in 9th grade is associated with graduating high school, remaining enrolled in high school through 11th grade, and earning an industry-recognized credential.<sup>18</sup>
- A 2011 study found that high school students who took three or more CTE credits were less likely to drop out than those who took one or fewer CTE credits.<sup>19</sup>

- Research from the Association for Career & Technical Education indicates that 93% of students in CTE programs graduate high school, outpacing the national graduation rate of 80%.<sup>11</sup>
- 75% of high school students who take CTE coursework pursue post-secondary studies shortly after graduation.<sup>12</sup>
- 81% of students who did not complete high school say relevant, real-world learning opportunities would have kept them in school.<sup>13</sup>

## Improved transition to post-secondary education and careers

Available evidence indicates that students enrolled in CTE courses in high school have smoother transitions to college and careers.

- A 2019 study shows that students who took three or more credits in the same CTE subject are more likely to go to college than otherwise equivalent students who did not.<sup>20</sup>
- A 2017 study found a link between taking CTE courses and higher wages, especially among students who took upper-level CTE courses.<sup>21</sup>
- A 2013 longitudinal study indicated that the number of CTE courses taken in high school was significantly correlated to earning a college degree.<sup>22</sup>
- Students who earn industry-recognized certificates through CTE programs are typically more employable than those who do not earn certifications. In 2012, the unemployment rate for students who took three or more CTE classes in the same cluster area was 10 percent, and 72 percent of those students were employed full-time. In comparison, all other students experienced 12 percent unemployment, and only 67 percent were employed full-time.<sup>23</sup>

## A Smart Solution

Edgenuity has emerged as a leading provider of online courseware, with robust CTE offerings in business, technology, STEM, health science, agriculture, and government services. Edgenuity CTE courses provide:

### Rigorous, engaging, career-relevant coursework

Edgenuity's rigorous CTE courses span almost every career cluster. Courses not only orient students to industries and careers, but also provide opportunities for students to deepen their understanding of the course material by applying academic and technical skills to real-world tasks. Course content focuses on objectives directly related to the relevant certification exams and incorporates current technologies and practices. By providing a clear context for learning, Edgenuity ignites student interest. The career focus provides students with a sense of direction that motivates them to stay in school and achieve. Edgenuity's CTE courses help students gain critical leadership, communication, teamwork, problem-solving, and interpersonal skills needed to succeed in the world outside of school.

### Highly structured, explicit instruction

Explicit instruction is the cornerstone of Edgenuity CTE courses. Our courses deliver explicit instruction, orient students to the lesson goals and key vocabulary, ground concepts in relevant real-world contexts, and offer clear and concise explanations of subject matter. Courses provide many opportunities for students to understand the content through multiple representations of concepts, such as text, graphic organizers, tables, graphs, interactive graphics, and other interactive media. Students then practice skills through guided practice and independent practice through interactive, highly engaging activities. Dynamic learning engages students in the content and gives a broader view of the concepts being studied, while online assessments allow for immediate feedback. For courses that feature hands-on software projects, our commitment to using reputable, industry-standard software makes our courses more accessible to students, parents, and school districts.

### Collaborative student learning environment

Edgenuity CTE courses encourage deep reflection and enable students to ask questions and share information and ideas. Our learning environment provides a platform for collaboration and communication, allowing students to learn from one another as they develop their communication skills.

### Robust reporting tools

The Edgenuity learning management system provides teachers with unprecedented access to information about student engagement, progress, and achievement. This data can help administrators track progress and identify areas for more targeted support.

## Embedded support for differentiated instruction

Edgenuity incorporates the principles of universal design in its courses. Courses are designed to accommodate all students, including those with learning disabilities, physical challenges, or sensory impairments.

## Flexible and affordable software

Edgenuity courses are an effective strategy to reach out to a critical mass of students who may be under-enrolled or unsuccessful in traditional brick-and mortar schools. Edgenuity CTE courses offer a flexible, online solution that helps personalize the learning experience for every student.

## References

1. ExcelinEd and Burning Glass Technologies. (2019). *Credentials Matter: Report 1: A National Landscape of High School Student Credential Attainment Compared to Workforce Demand*.
2. Bureau of Labor Statistics. (2019, September). Educational attainment for workers 25 years and older by detailed occupation. Retrieved from <https://www.bls.gov/emp/tables/educational-attainment.htm>
3. The Nation's Report Card. (2016). *2015 Mathematics & Reading at Grade 12*. Retrieved from [https://www.nationsreportcard.gov/reading\\_math\\_g12\\_2015/](https://www.nationsreportcard.gov/reading_math_g12_2015/)
4. U.S. Department of Education, National Center for Education Statistics. (2019). *The Condition of Education 2019* (NCES 2019-144), Public High School Graduation Rates. Retrieved from [https://nces.ed.gov/programs/coe/indicator\\_coi.asp](https://nces.ed.gov/programs/coe/indicator_coi.asp)
5. Symonds, W.C., Schwartz, R., & Ferguson, R. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Pathways to Prosperity Project, Harvard University Graduate School of Education.
6. U.S. Census Bureau (2018). *Educational Attainment* (S1501). Retrieved from <https://data.census.gov/>
7. Bureau of Labor Statistics. (2019). Unemployment rates and earnings by educational attainment. Retrieved from <https://www.bls.gov/emp/tables/unemployment-earnings-education.htm>
8. ManpowerGroup. (2018). Solving the Talent Shortage: Build, Buy, Borrow, and Bridge. Retrieved from [https://go.manpowergroup.com/hubfs/TalentShortage%202018%20\(Global\)%20Assets/PDFs/MG\\_TalentShortage2018\\_lo%206\\_25\\_18\\_FINAL.pdf](https://go.manpowergroup.com/hubfs/TalentShortage%202018%20(Global)%20Assets/PDFs/MG_TalentShortage2018_lo%206_25_18_FINAL.pdf)
9. Plank, S. B., DeLuca, S., & Estacion, A. (2005). *Dropping out of high school and the place of career and technical education: A survival analysis of surviving high school*. St. Paul, MN: National Research Center for Career and Technical Education, University of Minnesota.
10. Rosen, R., Visher, M., & Beal, K. (2018). *Career and Technical Education: Current Policy, Prominent Programs, and Evidence*. New York: MDRC.
11. Association for Career and Technical Education (2018). *CTE Today!* Retrieved from [https://www.acteonline.org/wp-content/uploads/2018/03/CTE\\_Today\\_Fact-Sheet\\_January2018.pdf](https://www.acteonline.org/wp-content/uploads/2018/03/CTE_Today_Fact-Sheet_January2018.pdf)
12. Association for Career and Technical Education (2017). *Healthcare, Manufacturing and Trade among Fastest-Growing CTE Sectors*. Retrieved from: <https://industryconnect.acteonline.org/2017/02/healthcare-manufacturing-and-trade-among-fastest-growing-cte-sectors.html>
13. Association for Career and Technical Education (2017). *Healthcare, Manufacturing and Trade among Fastest-Growing CTE Sectors*. Retrieved from: <https://industryconnect.acteonline.org/2017/02/healthcare-manufacturing-and-trade-among-fastest-growing-cte-sectors.html>
14. Castellano, M., Sundell, K., Overman, L.T., & Aliaga, O.A. (2012). Do career and technical programs of study improve student achievement? Preliminary analyses from a rigorous longitudinal study. *International Journal of Educational Reform*, 21(2), 98–115.
15. Stern, D., Dayton, C., & Raby, M. (2010). *A proven strategy to prepare high school students for college and career*. Berkeley, CA: Career Academy Support Network, University of California Berkeley, Graduate School of Education.
16. Park, T. D., Santamaria, L. A., van der Mandele, L., Keene, B. L., & Taylor, M. K. (2010). *Authentic literacy in career and technical education: Technical appendices to the Spring 2009 pilot study*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville.
17. Stone III, J. R., Alfeld, C., & Pearson, D. (2008). Rigor and relevance: Enhancing high school students' math skills through career and technical education. *American Educational Research Journal*, 45(3), 767–795.
18. Dougherty, S. (2018). The Effect of Career and Technical Education on Human Capital Accumulation: Causal Evidence from Massachusetts. *Education Finance and Policy* 13(2), 119-148.

19. Kotamraju, P., & Mettelle, J. L. III. (2012). Using return on investment (ROI) and other related tools: *Guidelines for measuring career and technical education (CTE) internal efficiency and external effectiveness*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville.
20. Giani, M.S. (2019). *Who Is the Modern CTE Student? A descriptive portrait of career and technical education students in Texas*. Washington, D.C.: American Enterprise Institute.
21. Kreisman, D., Stange, K. (2017). Vocational and Career Tech Education in American High Schools: The Value of Depth Over Breadth. *Education Finance and Policy* 0, 1–72.
22. Alfeld, C., & Bhattacharya, S. (2013). *Mature programs of study: Examining policy implementation at the local level*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville.
23. U.S. Department of Education, National Center for Education Statistics. (2012). Educational Longitudinal Study of 2002. *Third Follow-up Restricted Use Data File, ELS(2002)*. Retrieved from <https://www2.ed.gov/datastory/cte/index.html>

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Edgenuity courses provide a powerful set of tools, helping put students on a path to personal, professional, and academic success. **For more information, e-mail [solutions@edgenuity.com](mailto:solutions@edgenuity.com)** or view our national course list and state-specific course lists.







