

Career and Technical Education: College Readiness and Cost-Effectiveness, 2012–2013

Measuring the Success of the Career and Technical Education (CTE) Program

The mission of the CTE program is to provide opportunities for students to acquire 21st century academic and technical skills needed for entry into the global workforce and into postsecondary education. In the absence of a state-recognized measure of work readiness, college readiness* alone was used as a measure of CTE program success for the purpose of the cost-effectiveness analysis. Of the 4,398 seniors in 2012–2013 with college-readiness and CTE data available, 2,671 (61%) were college ready.

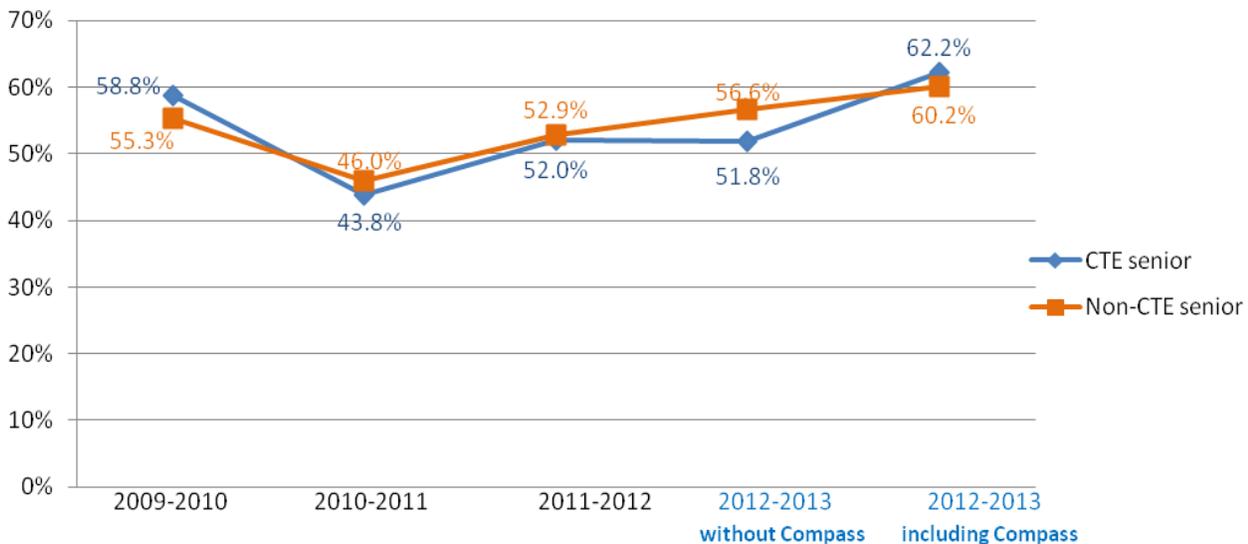
College Readiness Results Over Time

No significant difference existed in the college readiness of CTE and non-CTE seniors over time. The percentages of college ready seniors (i.e., both non-CTE and CTE) increased significantly in 2012–2013, compared with the previous school year (Figure 1). This increase was largely due to the inclusion of Compass test data, which had not been available for analysis in prior school years. In 2012–2013, the inclusion of Compass test results increased the college readiness rate by 6% for non-CTE seniors and by 20% for CTE seniors, compared with the college readiness rates for that year if Compass results were not included.

Seniors Included in the College Readiness Analysis

During the 2012–2013 school year, 4,953 seniors were enrolled. Only 4,398 (89%) of all seniors had available CTE indicator data, as well as Texas Assessment of Knowledge and Skills (TAKS) scores in English language arts (ELA), composition, and mathematics and/or SAT, ACT, or Compass scores, from which to calculate college readiness. Of the seniors with both CTE indicator and college readiness data available, 1,204 (27%) were CTE concentrators.

Figure 1. No significant difference existed in the college readiness of Career and Technical Education (CTE) and non-CTE seniors over time. The addition of Compass data raised the percentage of all college ready seniors in 2012–2013, but especially that of CTE concentrators.



Source. AISD student course enrollment, exit-level Texas Assessment of Knowledge and Skills, American College Test, SAT, and Compass test files prepared by the Department of Research and Evaluation

* The Texas standards for college readiness are provided at the end of this report.

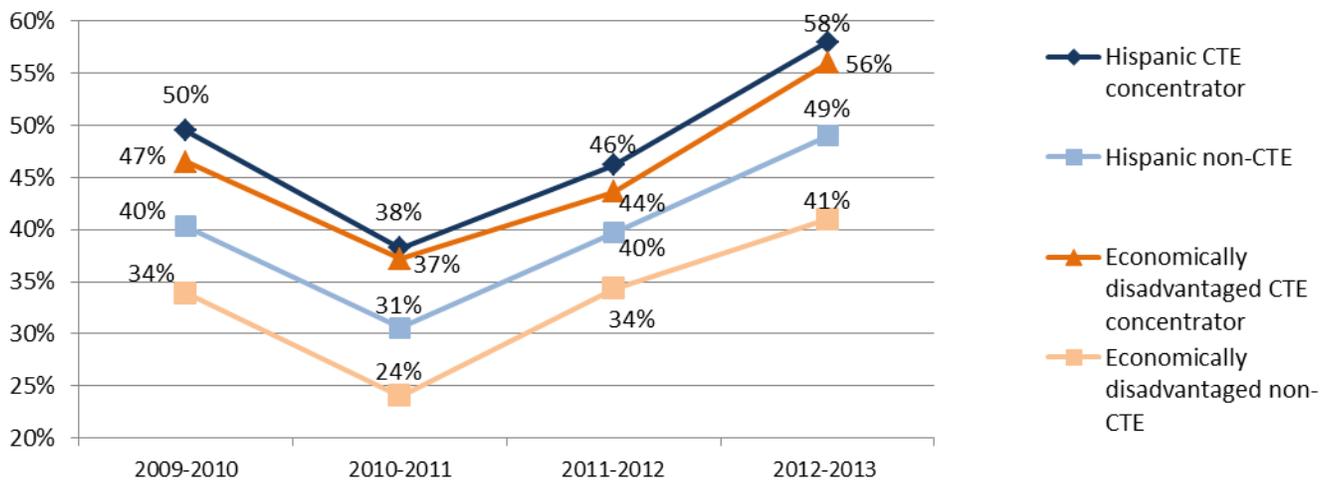
Why is the Compass test included?

The Texas Education Agency includes the Compass test among its accepted measures of college readiness. Compass results were included in this report because doing so more accurately reflected the percentage of college ready seniors, especially for Hispanic students and economically disadvantaged students, who comprised the great majority of Compass test takers (78% and 89%, respectively).

Also, a disproportionate number of CTE concentrators took the Compass: 45% of test takers were CTE concentrators, who comprised only 27% of all seniors. Therefore, including Compass results provided a more accurate measure of the college readiness of CTE concentrators.

Across the past four school years, the college readiness rates of Hispanic seniors and of economically disadvantaged seniors who concentrated in CTE were higher than were those of non-CTE seniors in these student groups (Figure 2). Also, each school year, CTE concentrators were disproportionately Hispanic and economically disadvantaged, compared with non-CTE seniors.

Figure 2. Consistently over time, significantly higher percentages of Hispanic seniors and of economically disadvantaged seniors who concentrated in Career and Technical Education (CTE) than of non-CTE students in these student groups were college ready.



Source. AISD student demographic, course enrollment, exit-level Texas Assessment of Knowledge and Skills, American College Test, SAT, and Compass test files prepared by the Department of Research and Evaluation

According to Texas Education Agency (TEA) accountability reports (TEA, 2007, 2009, 2011, 2013), these student groups historically have had lower college readiness rates than their counterparts have had. Thus, one would expect the percentage of CTE seniors who were college ready to be lower than that of non-CTE seniors. Instead, it appears the higher college readiness rates for CTE Hispanic seniors and economically disadvantaged seniors closed the college readiness gap between CTE and non-CTE seniors.

CTE Concentrators

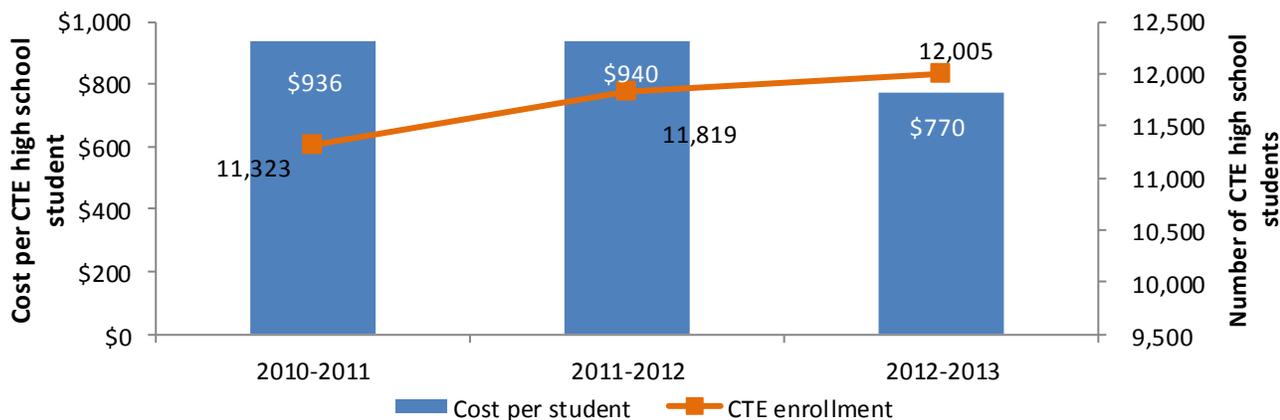
The seniors in this study were considered CTE concentrators if (a) their 4-year plan of courses reflected the intent to take a sequence of two or more CTE courses for three or more credits, (b) they took one of the CTE courses in the sequence prior to their senior year, and (c) they took an upper-level CTE course in the sequence during their junior or senior year that met the credit requirement.

CTE concentrator seniors were chosen as a unit of study for CTE program evaluation because the sequential course of study provided them with a foundation for a career, while seniors who took random CTE courses and seniors who did not take any CTE courses did not have that foundation.

Is the CTE program cost-effective?

CTE expenditures decreased 13% from 2010–2011 to 2012–2013, from \$10.6 million to \$9.2 million. Student enrollment in CTE increased 6% during the same period, and the average cost per student decreased by 18% (Figure 4).

Figure 4. The cost per Career and Technical Education (CTE) high school student decreased in 2012–2013, while CTE enrollment increased steadily.



Source. AISD CTE program budgets and student enrollment data prepared by DRE

Note. The cost per CTE high school student calculation includes actual total expenditures by CTE, divided by the number of CTE students.

The unit of effectiveness used for the cost-effectiveness analysis was the college readiness of 2013 seniors who were CTE concentrators. These CTE concentrators were enrolled in Austin Independent School District (AISD) for the last 3 years of high school, and took at least one CTE course each year. These criteria were specified to include only students whose college readiness CTE had an opportunity to influence. The costs included per student expenditures for 3 school years, using actual annual expenditures.

Of the 914 CTE seniors in CTE for 3 years, 593 (65%) were college ready. The cost of educating each of the 914 CTE seniors over the 3 years was \$2,646, which was \$39 more than it was in 2011–2012. However, the per student cost of getting the “effect” of college readiness after 3 years was \$4,079, which was \$988 less than the cost the previous year. This cost decrease occurred as a result of a higher percentage of CTE seniors achieving college readiness status in 2012–2013 than did so the previous year, coupled with lower expenditures compared with 2011–2012.

The inclusion of Compass results in 2012–2013 made it difficult to compare results across years. However, it is important to note that if the cost-effectiveness analysis had been conducted in a comparable way to the way in which it was conducted in past years (i.e., with college readiness rates that excluded Compass results), the cost-effectiveness of the CTE program still would have improved over the past year. The per student cost of getting the “effect” of college readiness (excluding Compass results) after 3 years was \$4,956, which was \$110 less than the cost the previous year.

Conclusions

Compared with the measure in 2011–2012, the cost-effectiveness of the CTE program improved. Consistently over the years, the significantly higher levels of college readiness for Hispanic seniors and economically disadvantaged seniors who concentrated in CTE than for non-CTE seniors might have resulted either from the

success of the CTE program itself or from its ability to attract high-achieving or motivated individuals in these student groups. In any case, despite the disproportionate representation of traditionally lower-achieving student groups in CTE, no significant difference existed in the college readiness of seniors based on CTE status.

Definition of College Readiness

TEA and the Texas Higher Education Coordinating Board publish standards for the Texas Success Initiative. To be considered college ready in **English**, a student must

- obtain a 2200 scale score or higher on the ELA TAKS and a 3 or higher on the composition; **OR**
- achieve a score of at least 500 on the English portion of the SAT, with a composite score of at least 1070; **OR**
- achieve a score of at least 19 on the English portion of the ACT, with a composite score of at least 23; **OR**
- achieve a score of 81 on the Compass reading test and a 6 in writing (or 5 with an objective score of 59).

To be considered college ready in **math**, a student must

- achieve a scale score of at least 2200 on the math TAKS; **OR**
- achieve a score of at least 500 on the math portion of the SAT, with a composite score of at least 1070; **OR**
- achieve a score of at least 19 on the math portion of the ACT, with a composite score of at least 23; **OR**
- achieve a score of 39 on the Compass algebra test.

For this report, only seniors college ready in both English and math were deemed college ready.

Notes About CTE Budgets and Cost-effectiveness Methodology

Three years of CTE actual expenditures at the high school level were used to calculate the cost per CTE student and cost-effectiveness. Expenditure categories included payroll, contracted services (including construction costs), supplies and materials, professional development opportunities, and capital outlays. Not all the funding sources for CTE remained constant over those 3 years, but they included the following for at least 1 year:

- Local 199 funds (state funds that go to the district for CTE, including payroll costs)
- Carl D. Perkins grant (federal funding for CTE programs)
- Tech Prep (state program funds)
- E3 Alliance (grant funds)
- 3M (grant funds)
- American Recovery and Reinvestment Act (ARRA) funds

To calculate the cost per student, the total number of CTE students that year was divided into the corresponding year's budget. The 3 years of per student costs were added to get a single per student cost. For the cost-effectiveness analysis, the per student cost was multiplied by 914 to get the total cost of serving all the CTE concentrators who took at least one CTE course during their sophomore, junior, and senior years. That total was divided by the 593 who were college ready, resulting in the cost of producing one college-ready CTE concentrator. Had all the CTE students been college ready, the cost of producing a college ready CTE concentrator would have equaled the per student cost. Fewer college ready CTE concentrators resulted in a higher cost to produce one.

Funding Sources

Funding for the development of this report was provided by the CTE program.

About the Department of Research and Evaluation

The Department of Research and Evaluation (DRE) was established in 1972 to support program decision making and strategic planning in AISD. The department is housed in the Office of Accountability and is charged with evaluating federal, state, and locally funded programs in AISD. DRE staff pride themselves on integrating best and innovative evaluation practices with educational and institutional knowledge. DRE works with program staff throughout the district to design and conduct formative and summative program evaluations. The evaluations report objectively about program implementation and outcomes, and serve to inform program staff, decision makers, and planners in the district. DRE also responds to information needs at all levels. DRE reports may be

accessed online at <http://www.austinisd.org/dre/search>.

About the Author

Carol Pazera joined DRE in 2009 and focuses on programs and initiatives implemented for middle and high school students. Carol has specialized in research and evaluation for more than 15 years. Throughout her career, she has assisted numerous nonprofit organizations in the development of evaluation processes and instruments. She also co-founded and led an agency that served high school students in Austin who were at risk of dropping out of school. Carol earned a B.A. in secondary education from the University of Illinois at Champaign-Urbana, an M.A. in Latin American Studies, and an M.S. in community and regional planning from the University of Texas at Austin. She has been a member of the American Evaluation Association since 2005.

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