MEMORANDUM March 7, 2014

TO: Board Members

FROM: Terry B. Grier, Ed.D.
Superintendent of Schools

SUBJECT: **CAREER AND TECHNICAL EDUCATION EVALUATION REPORT**

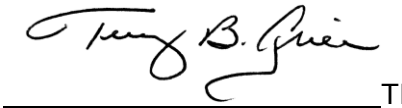
CONTACT: Carla Stevens, (713) 556-6700

Attached is the 2012–2013 evaluation report on the Career and Technical Education (CTE) program implemented in the district. This report assesses the program participation and academic performance of CTE participants from the past two years, 2011–2013, as compared to non-CTE students. This report also includes a summary of the course offerings and program components implemented in the CTE program. Approximately, 175 different CTE courses were offered at 67 schools (29 high schools and 38 middle schools) throughout the district in 2012–2013.

On the spring 2012 and spring 2013 State of Texas Assessments of Academic Readiness (STAAR) end-of-course (EOC) assessments, the percentages of CTE 2 (taking a coherent sequence of courses) students who met the satisfactory standard were higher for Algebra I, Biology, English I-Reading, and English II-Reading and Writing than the percentage met by CTE 3 (enrolled in Advanced Technical Credit courses) and non-CTE students. In addition, CTE 2 and CTE 3 students outperformed non-CTE students in English language arts (ELA), mathematics, science, and social studies on the Texas Assessment of Knowledge and Skills (TAKS) tests administered in spring 2012 and spring 2013. The higher performance by CTE students supports the belief that involvement in the CTE program can be academically-beneficial for students.

The CTE program aligns with HISD's strategic direction, which focuses on the core initiative: Rigorous Instructional Standards and Supports. Currently, the CTE program offers rigorous academic and technical curricula, career counseling, business partnerships, as well as out-of-classroom learning experiences for students.

Should you have any further questions, please contact my office or Carla Stevens in Research and Accountability at (713) 556-6700.


TBG

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cc: Superintendent's Direct Reports
Michael Cardona
Orlando Riddick
Michael Webster

RESEARCH

Educational Program Report

Career and Technical Education 2012–2013

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CAREER AND TECHNICAL EDUCATION

PROGRAM SUMMARY AND STUDENT PERFORMANCE OUTCOMES, 2012–2013

Executive Summary

The Career and Technical Education program (CTE) in the Houston Independent School District (HISD) has a mission to equip students with the marketable academic and technical skills needed to compete in the global workforce and/or to continue their education at the post-secondary level after graduation. Consequently, the goals of the CTE program are: (1) to provide students with relevant and up-to-date instruction within their career pathway(s) of interest, (2) to offer an advanced curriculum that can lead to industry certifications, (3) to expose students to out-of-classroom and real-world work experiences, and (4) to implement professional development that focuses on best practices in career and technical education. By enrolling in CTE courses and participating in CTE program components, students are empowered to strengthen the economic and social foundation of the local community and beyond. The purpose of this evaluation report is to present:

- demographic characteristics of CTE participants;
- CTE program components and course offerings;
- and the test performance of CTE students in comparison to their non-CTE school peers.

Highlights

- Students in grades six through twelve are eligible to take CTE courses. Over the past two years, HISD student enrollment in grades six through twelve has increased from 87,244 in 2011–2012 to 87,418 in 2012–2013. However, the CTE program experienced a slight decrease in enrollment over the two-year period, starting with 32,955 students in 2011–2012 to 31,871 students in 2012–2013.

- From 2011–2012 to 2012–2013, the number of students enrolled in CTE 1 courses as electives decreased by 14.9 percent to 14,337 in 2012–2013. CTE 1 enrollment figures include students in grades six through twelve. During the same time period, the number of CTE 2 students increased 21.0 percent to 14,858 in 2012–2013. CTE 2 enrollment numbers include students in grades nine through twelve. High school students have been encouraged to select a coherent sequence of courses related to their interested career pathway, therefore, the number of CTE students increased over the two-year period.

- CTE program components included course offerings, certifications/licenses, career and technical student organizations, college credit for CTE students, career preparation, internships, and job shadowing.

- On the 2012 and 2013 State of Texas Assessments of Academic Readiness (STAAR) end-of-course (EOC) assessments, the percentages of CTE 2 students who met the satisfactory standard were higher for Algebra I, Biology, English I-Reading, and English II-Reading and Writing than the percentage met by non-CTE students.

- From spring 2012 through spring 2013, CTE 2 and CTE 3 students outperformed non-CTE students in English language arts (ELA), mathematics, science, and social studies on the Texas Assessment of Knowledge and Skills (TAKS).

- Specifically, in 2013, the percentage of CTE 3 students passing the TAKS math test was seven percentage points higher than the passing rate of non-CTE students (92 percent vs. 85 percent), while the percentage of CTE 2 students who passed the TAKS math test was six percentage points higher than non-CTE students (91 percent vs. 85 percent).

Recommendations

1. Continue to provide program offerings and components across the career concentrations so that CTE program students can select interests from a variety of career pathways and participate in multiple career development experiences. The amount of diverse programming available for students encourages career exploration and helps students to develop an awareness of their future career options.

2. The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period remained higher than the 4-year graduation rates of districtwide students. Similarly, annual dropout rates of CTE students were lower than those of HISD students. Considering the higher graduation rates and lower annual dropout rates of CTE students, efforts should continue to be made to increase the enrollment of high school students in a coherent sequence of courses. Early enrollment in the CTE program may help students develop a stronger connection to school and career-oriented activities such that graduation becomes a more realistic and attainable goal.

Administrative Response

The College and Career Readiness Department has reviewed the 2012–2013 Career and Technical Education (CTE) Program Summary and Student Performance Outcomes report. The report describes and evaluates specific trends within the district's CTE program. Additionally, we are pleased to see that CTE students outperformed non-CTE students on TAKS. The department has begun major reviews of the CTE programs across the district with a goal of increasing enrollment in CTE programs and work-based learning opportunities for students.

Introduction

The Career and Technical Education program (CTE) in the Houston Independent School District (HISD) has a mission to equip students with the marketable academic and technical skills needed to compete in the global workforce and/or to continue their education at the post-secondary level after graduation. The CTE department collaborates with principals, instructional leaders, and industry professionals to design, implement, and assess core and career program offerings. To ensure continuous student achievement, basic and advanced academics as well as technical skills are integrated into the curriculum to enhance the attainment of competent proficiencies and standards. The CTE program provides students with real work opportunities exposing them to the demands of the workforce. These opportunities are made available by collaborations between HISD, local businesses, and professional organizations.

The CTE program in HISD offers a variety of career education courses that prepare students for entry into institutions of higher learning or the workforce. These courses are taught by certified CTE instructors. Sixth-grade through twelfth-grade students can enroll in elective courses that match their career interests. Students who select CTE courses as general electives are coded as CTE 1 participants.

High school students can develop a career concentration and take multiple CTE courses that correspond with their interests. Students who select a coherent sequence of courses are coded as CTE 2 participants and those with an interest in technical fields can enroll in Advanced Technical Credit (ATC) courses (coded as CTE 3 participants). The development of a career pathway concentration that is planned from a strong coherent sequence of courses allows students the opportunity to identify career options that lead to transferable skills and knowledge. The Texas Education Agency (TEA) has identified the following career concentrations:

- Agriculture, Food and Natural Resources;
- Architecture and Construction;
- Audio/Visual (A/V) Technology and Communications,
- Business, Management and Administration;
- Education and Training;
- Finance;
- Government and Public Administration;
- Health Science;
- Hospitality and Tourism;
- Human Services;
- Information Technology;
- Public Safety, Corrections, and Security;
- Manufacturing;
- Marketing, Sales, and Service;
- Science, Technology, Engineering, and Mathematics; and
- Transportation, Distribution and Logistics.

In an effort to address the developing needs of the future workforce, the Texas Education Agency (TEA) and the Texas Higher Education Coordinating Board (THECB) have revised a plan of action, the Texas State Plan for Career and Technical Education, 2008–2013. The CTE State Plan outlines a renewed vision for career and technical education programs where there is clear understanding that

academic education and technical education are not in conflict with one another; instead, academic concepts are reinforced and utilized in technical education applications (CTE State Plan, 2007). HISD's CTE program's philosophy clearly emphasizes that a rigorous academic foundation contributes to success in school and in life; that all students should be provided equal access to opportunities that will help them succeed; and that career and technical education should complement and enhance academic preparation by enabling students to apply learned principles to a variety of family, community, and career situations.

The HISD CTE program has adopted the state plan to provide academic excellence as defined by the federal *No Child Left Behind* law. This includes the provision of quality career and guidance counseling; partnerships that benefit students and schools; rigorous academic and technical curricula supporting seamless career pathways; professional development for educators to enhance teaching and learning; ongoing data evaluation of student performance; and administrative leadership for program effectiveness and compliance.

Methods

Data Collection

- Descriptive data, including student demographics and longitudinal enrollment figures in the CTE program, were obtained from the Public Education Information Management System (PEIMS). Within the program, students were assigned a CTE code that indicated their level of enrollment in CTE courses. Students who took one or more CTE course as electives were coded 1; students enrolled in CTE courses as part of a coherent sequential plan of study were assigned a code of 2; and students enrolled in Advanced Technical Credit (ATC) courses received a code of 3. Enrollment numbers were collected based on total CTE participation as well as by code participation. Certification data were obtained from CTE personnel, while the Career and Technical Education website (HISD, 2010) provided details about the program and curriculum.

- The State of Texas Assessments of Academic Readiness (STAAR) is a state-mandated, criterion-referenced assessment used to measure student achievement. The STAAR replaced the Texas Assessment of Knowledge and Skills (TAKS) test in the spring of 2012. For this report, the STAAR results reported include end-of-course (EOC) assessments in English language arts (English I and English II), mathematics (Algebra I), science (Biology), and social studies (U.S. History). In 2011–2012, students in grades 9 and in 2012–2013, students in grades 9 and 10 took the EOC assessments.

- Quantitative analysis was accomplished using results from the Texas Assessment of Knowledge and Skills (TAKS) database. TAKS is a criterion-referenced test first administered in the spring of 2003, and which started being phased out in 2012. It measures academic achievement in English language arts (ELA), mathematics, social studies, and science in grade 11. The spring 2012 and spring 2013 TAKS test results are presented in this report. For the 2011–2012 school year, CTE 2 and CTE 3 10th and 11th grade students remained under TAKS tests requirements for graduation. For 2012–2013, TAKS data are presented for 11th grade students only.

Results

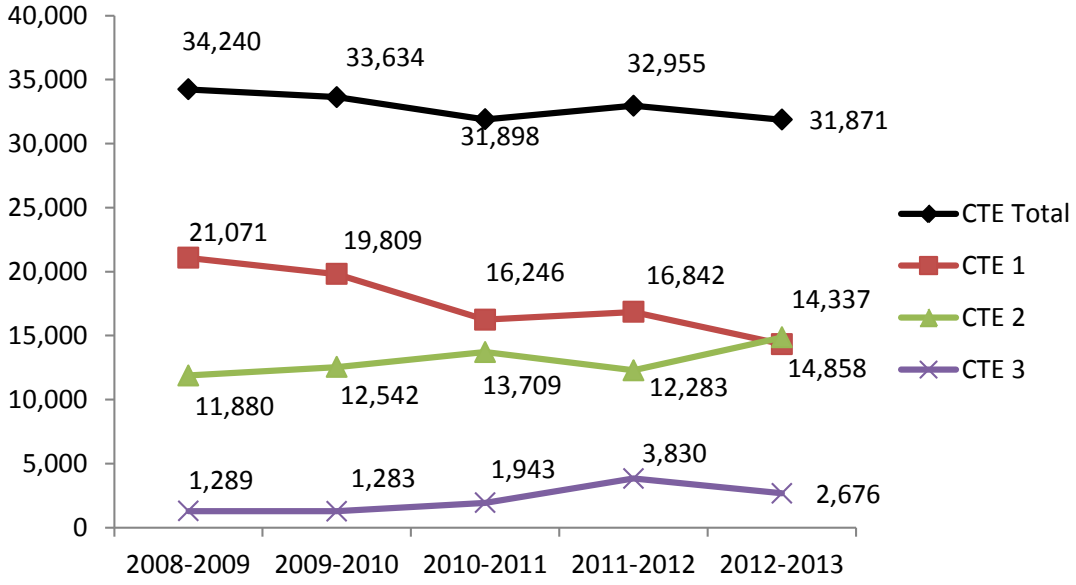
What were the demographic characteristics of students enrolled in the CTE program over the past two years, 2011–2013?

- HISD enrollment numbers and CTE student enrollment by program code are shown in **Table 1** (see page 18). These codes are based on students in grades six through twelve eligible to participate in the CTE program. Over the past two years, HISD student enrollment in grades six through twelve has slightly increased from 87,244 students in 2011–2012 to 87,418 in 2012–2013. However, the total number of students taking CTE courses over the two-year period decreased by 3.3 percent, from 32,955 students in 2011–2012 to 31,871 students in 2012–2013.

- Specifically, the number of students enrolled in CTE 1 courses as elective-takers decreased from 16,842 in 2011–2012 to 14,337 in 2012–2013. However, the numbers of CTE 2 students increased from 12,283 in 2011–2012 to 14,858 in 2012–2013. The number of CTE 3 students decreased from 3,830 students in 2011–2012 to 2,676 in 2012–2013.

- **Figure 1** presents the five-year (2008–2009 through 2012–2013) CTE enrollment data. In general, the number of students taking any CTE courses decreased from 34,240 in 2008–2009 to 31,871 in 2012–2013. Specifically, the number of students taking CTE courses as general electives (CTE 1) has decreased over the five-year period by 32.0 percent. However, the number of students enrolling in CTE 2 and CTE 3 courses from 2008–2009 increased by 25.1 percent and 107.6 percent, respectively.

Figure 1. Trends in CTE Enrollment, 2008–2009 Through 2012–2013



- As displayed in **Table 2** (page 19), the percentage of economically-disadvantaged students within the district for grades six through twelve slightly decreased from 75.1 percent in 2011–2012 to 74.6 percent in 2012–2013. The percentage of economically-disadvantaged students enrolled in CTE courses also decreased during this two-year period (75.4 percent vs. 74.9 percent).

- Compared to the district's grades six through twelve enrollment, White, limited English proficient, and gifted/talented students are underrepresented in CTE courses while at-risk students are overrepresented.

What were the CTE program components and course offerings implemented in HISD in 2012–2013?

The HISD CTE program consists of several components and course offerings that give HISD students opportunities to explore career options and gain preparation for the world of work and post-secondary education. The CTE program components ensure that all CTE students develop career awareness within their selected course of study, as well as exposure to professional experiences in order to enhance their mastery, confidence, and leadership skills.

In addition to the program components, the CTE department offers a variety of programs from which students can select a career pathway of study. Career pathways provide a plan for all students, regardless of their abilities, talents, or desired levels of education. Career concentration pathways provide all students with areas of focus, along with flexibility, and a variety of ideas to pursue as they make decisions regarding course selection. By taking CTE courses, students are given opportunities to participate in hands-on training within their career pathway of interest. Some of the 2012–2013 CTE program components include the following (listed alphabetically):

Business Partnerships

Business partnerships provide students with enriching learning experiences such as one-on-one mentoring and real-world work opportunities. CTE students are allowed to participate in field trips, site visits, and complete internships at local business. These businesses recognize the need to expose local students to various aspects of the world of work and the importance of on-the-job training experiences. Some of HISD business partners include Baker Hughes, CVS/Pharmacy, Exxon, Houston Community College, and Kroger.

Career Cowboy and Ready Wagon

Career exploration presentations are presented to HISD elementary school students to increase their career awareness and peak their interest in various careers. The Career Cowboy provides students with interactive, music-filled demonstrations with information about different professions. Students also get to participate in activity stations and hands-on demonstrations that help them begin to develop links between skills, interests and career choices.

Career and Technology Student Organizations (CTSO)

CTE students are encouraged to join student organizations that are directly related to their selected career pathway. These organizations offer students opportunities to develop leadership and teamwork skills that help prepare them for the work force and/or for college training. HISD has developed several partnerships with local, regional, and national professional organizations so that the school-level student organizations can fully participate in activities and benefit from their professional memberships. Some of these organizations include the Business Professionals of America (BPA), Future Business Leaders of

America (FBLA), Family, Career and Community Leaders of America (FCCLA), Health Occupations Students of America (HOSA), SkillsUSA, and the Technology Student Association (TSA).

Career Preparation, Internships, and Job Shadowing

Within CTE, students gain valuable insight and hands-on career experiences through internships and job shadowing. Students are placed in work-based settings in order to acquire knowledge and skills within real work environments. HISD has developed partnerships with various organizations and companies that provide students with on-the-job training experiences. For example, CTE students served as interns at Texas Children's Hospital and Methodist Hospital throughout the school year. Several students attending the High School for Law Enforcement and Criminal Justice had job shadowing experiences at the Houston Emergency Center.

Certifications/Licenses

Students within the CTE program have the opportunity to earn industry certifications and/or licenses within their chosen career pathways. Industry certifications serve as evidence of technical skill attainment. Earning industry certifications give students a sense of accomplishment, a highly-valued professional credential, and help them become more employable and eligible for higher starting salaries. There are over 90 professional certificates or licenses that are approved by TEA in which CTE high school students can earn. These certifications/licenses are connected to multiple industry careers such as cosmetologists, automotive technicians, and several business-related fields.

College Credit for CTE Students

There are two different kinds of courses that CTE students can take in order to earn college credit; dual credit courses and advanced technical credit course. Students within these courses are taught and graded in the same manner as college students who would take the course. Credits from these courses count toward the Distinguished Achievement Program (DAP) graduation plan, when students earn a grade of "B" or better. All courses are open to eleventh and twelfth-grade students and are provided at no charge.

Dual credit courses are the only courses that allow students to earn both high school and college credit hours simultaneously. They are developed and taught by college-approved instructors. No prerequisite classes are required to enroll in these courses. Advanced technical credit (ATC) courses are developed at the state level and are taught by local high-school teachers who received specialized training. College credit for ATC courses are awarded once students enroll in a participating college or university. The ATC program provides an opportunity for students to receive credit at participating community colleges across Texas for taking certain enhanced technical courses during high school. ATC courses are only offered in technical or workforce areas. The teacher of the course must meet the ATC teacher requirements, go through ATC training, and teach the high school course so that it meets the content of the equivalent college course.

When I Grow Up

During the 2012–2013 school year, the CTE department held the When I Grow Up career fair to allow area students to explore career options and develop an awareness of the opportunities available to them. The event included hands-on demonstrations, interactive presentations and competitions. This event was open to students, parents, and industry partners. The event was a way to highlight the accomplishments of CTE students as well as market the CTE program to HISD students, parents and community members.

Course Offerings

- Approximately, 175 different CTE courses are offered at 67 HISD schools throughout the district. These courses range from accounting to welding and are related to the career concentrations identified by TEA (listed on page 3). A partial listing of the CTE courses being offered in the district can be found in **Appendix A**.

A full description of all CTE classes and the school locations, where each class is available, can be found at the Career and Technical Education website. These courses are taken as electives or as part of a selected career concentration. Some of the 2012–2013 CTE specialized career programs are highlighted below.

Architecture and Construction

Students interested in careers in the construction industry have several school choices within HISD. The Construction, Art, Science and Technology (CAST) Academy is offered at Furr HS. This program is supported by the Association of General Contractors (AGC) to assist with the development of the construction workforce in the Greater Houston area. There are also Construction Academies located at Austin and Yates high schools. Construction trade education helps students develop manipulative skills, safety, judgment, technical knowledge, and related occupational information. Construction courses are designed to train students through contextual instruction in the layout, design, production and processing, assembling, testing, diagnosing and maintaining industrial, commercial and residential goods and services. Students are also provided opportunities to develop and apply leadership, social, civic and business-related skills through their involvement in the Vocational and Industrial Clubs of American (VICA), which is the student organization for young people enrolled in the Trade and Industrial programs. Basic Safety, Introduction to Construction Math, Introduction to Hand Tools, Introduction to Power Tools, Introduction to Blueprints, Basic Communications Skills, and Basic Employability Skills are among course offerings. The Houston Community College System partners with HISD to support students within the construction programs.

Business, Management, and Administration

The Business, Management, and Administration career concentration is divided into six pathways, including management, business financial management and accounting, human resources, business analysis, marketing, administration, and information support. Within these pathways, students learn about planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations. The courses help students develop the skills and knowledge to conduct business in the workplace and/or pursue education in business fields. Courses in business, management, and administration are offered at all HISD high schools.

Culinary Arts Programs

Culinary arts programs are available at Barbara Jordan, Davis, Wheatley, and Westside high schools and Harper Alternative School. The programs are designed to prepare students for career opportunities in the food service and hospitality industries. Culinary arts students train in specific culinary areas of interest, work toward receiving post-secondary credit, and enter the Chef Apprenticeship program, affiliated with the American Culinary Federation (ACF).

At Jefferson Davis High School, a hotel and restaurant management magnet program is offered along with a culinary arts component. At Davis, students interested in the tourism and hospitality industry, learn a variety of business management and culinary arts skills. Twelfth-grade students can participate in an internship program at the University of Houston. At Westbury, culinary arts students take courses related

to the entrepreneurship side of culinary arts as well as food preparation lessons. HISD partnered with the Texas Restaurant Association. As a result, Westside has a fully operational Outback Restaurant.

DeBakey's College Preparatory School

The DeBakey's College Preparatory School, a component of the Health Sciences Department of CTE, allows students to take four years of sequenced health science classes. All health science teachers at the DeBakey High School for Health Professions are CTE certified in order to teach the courses. The Health Science Curriculum consists of the following courses by grade level: Introduction to Health Science for ninth graders; Anatomy and Physiology for tenth graders; Health Science Rotations: Dental Science, Medical Laboratory, and Patient Care for eleventh graders; and Health Science III- Hospital Internships, Advanced Anatomy and Physiology, Rehabilitation Rotations and Business Computer Information Systems for twelfth graders. Junior and senior students intern at the Texas Medical Center to complete rotation components. At the end of four years, students are awarded a Health Science Certificate. DeBakey's College Preparatory School allows students to receive a well-rounded CTE foundation in the health sciences curriculum along with core academic classes.

Futures Academy

The Futures Academy is a dual enrollment model that enables students at HISD campuses to fulfill high school graduation requirements while simultaneously earning industry certifications, college credits, and an Associate of Science degree by August after their senior year. In partnership with Houston Community College, students take college courses on their high school campus taught by college professors. The seven Futures Academy programs and schools include: 1) Academy of Engineering Technology at Furr, 2) Academy of Process Technology at Kashmere, 3) Academy of Pharmacy Technology at Long, 4) Academy of Network and Computer Administration at Scarborough, 5) Academy of Logistics and Global Supply at Sterling, 6) Academy of Manufacturing Engineering Technology at Washington, and 7) Futures Academy of Heath Science Careers at Westside.

Health Science Program

The Health Science Career Cluster encompasses more than 200 career specialties and/or occupations. The Health Science program at Westbury High School focuses on careers in planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. The students at Westbury perform their clinical rotation duties at the Memorial-Hermann Hospital and the People's Clinic.

The High School for Law Enforcement & Criminal Justice (HSLECJ)

The H.S. LE/CJ**,** a separate and unique magnet school, began in the spring of 1981 as a recruitment source for minority police officers. Currently, the curriculum is designed to allow students to explore careers related to law enforcement and criminal justice. Entry requirements include an 80 average in academic subjects, passing scores on standardized tests, and good conduct grades.

At the High School for Law Enforcement & Criminal Justice, students take vocational classes at each grade level to expose them to the skills and experience necessary for law enforcement and legal-related criminal justice careers. The law-legal programs are involved in law activities with professional organizations outside of the school. By the twelfth grade, students can participate in a variety of work assignments related to their career choices.

Jack Yates School of Communications

Since 1978, the Jack Yates School of Communications has established a standard for excellence in the field of media communications. Located, on the campus of Jack Yates High School, the innovative

"school-within-a-school" focuses on three specialized areas: Media Technology, Photography, and Journalism. Jack Yates is the only HISD high school to house separate television and photography studios. The journalism department provides interns for the Houston Chronicle and the "Eye On Third Ward" initiative with the Museum of Fine Arts. The Yates School has also formed a strong alliance with Texas Southern University and the University of Houston to further teach youth through photography/media and to use the depth of information for positive change as producers and consumers.

Reagan Computer Technology Magnet Program

The Reagan High School Program for Computer Technology offers students instruction through the Academy of Finance. The Academy of Finance is a four-year program that prepares students for the banking and finance industry, advanced preparation in a junior college program, or enrollment in a full baccalaureate program. It is a comprehensive program of study designed to assist students in developing knowledge of the increasing role of technology in the world of finance. The Computer Electronics and Networking Technology program is a four-year program leading to proficiency as an A+ certified computer technician or a CISCO certified networking technician. Four years of math and science are presented as well as basic electronics, solid-state devices and circuits, microprocessor theory and interfacing, and computer maintenance and repair techniques. The Cisco Systems Networking Academy teaches the principles and practice of building and maintaining networks and prepares students for the certified CISCO Networking Associated exam. The students gain experiences on the latest microcomputer equipment with access to networks and the internet.

Transportation, Distribution, and Logistics

Within the Transportation, Distribution, and Logistics career concentration, HISD students are taught entry-level skills in the field of automotive technology. Students take courses in a coherent sequence to increase their levels of expertise in automotive technology. The program is a collaborative initiative between HISD and automotive industry partners such as local automotive dealerships and independently-owned repair shops. These automotive partners provide job-shadowing opportunities and apprenticeships to HISD students to gain real-world, on-the-job experiences. Several high schools have automotive labs, including Westbury High School and Waltrip HS. These schools have automotive labs that are certified by the National Automotive Technology Education Foundation (NATEF) and hold Automotive Service Excellence (ASE) certifications.

What were the certifications/licenses earned by students enrolled in the CTE program in 2012–2013?

- A total of 5,379 certifications and/or licenses were earned in 37 different specialization areas (see **Table 3**, page 20). The largest number of certifications was earned in the area of financial literacy, with 3,223 students earning the EverFi Certification. The CTE department made a strategic decision to focus the certification programs to those that aligned with career and college readiness concentrations, therefore, the number of total certifications earned in 2012–2013 (n = 5,379) decreased from the number earned in 2011–2012 (n = 7,170).

What were the academic performance results of students enrolled in the CTE program compared to HISD students over the past two school years, 2011–2012 and 2012–2013?

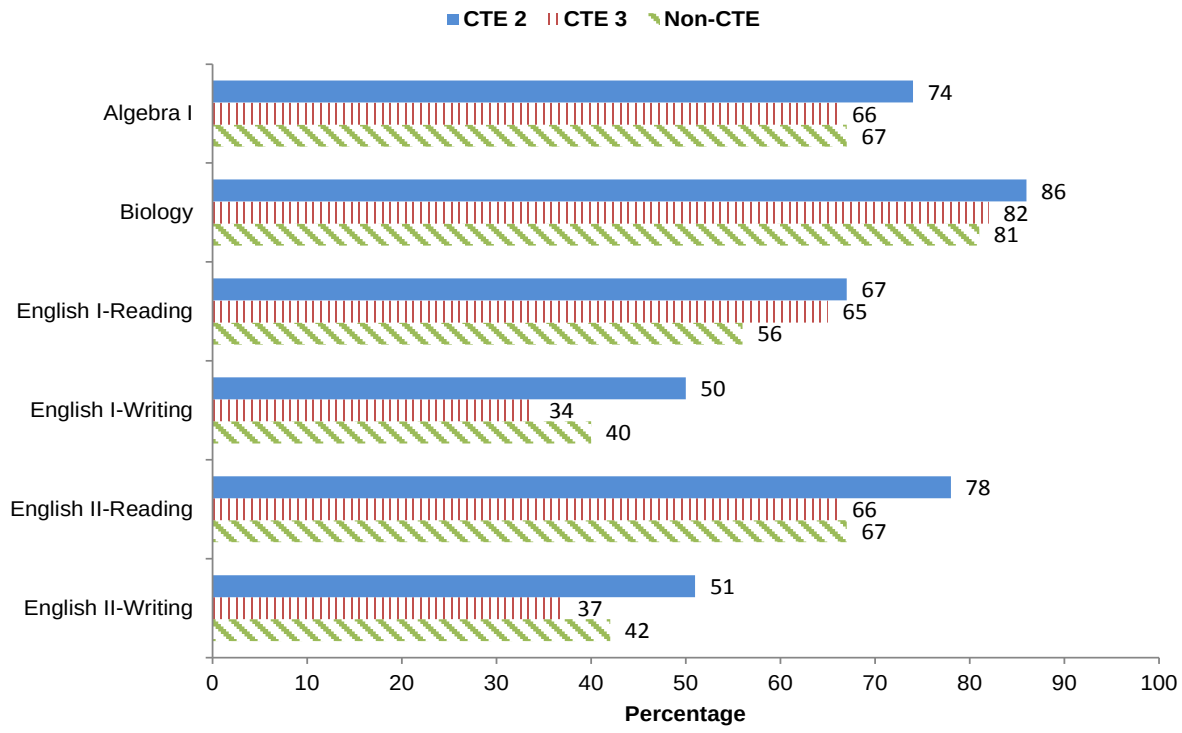
STAAR End-of-Course (EOC) Assessments

For high school, general subject-area TAKS assessments were replaced with fifteen STAAR end-of-course (EOC) assessments during the 2011–2012 school year. However, the 83rd legislature recently passed House Bill 5 which reduced the number of STAAR EOC assessments to five EOC tests that must be passed by students in order to graduate. The EOC assessments which students will need to pass are Algebra I, Biology, English I and II – Reading and Writing, and U.S. History. The performance standards set by the TEA for these assessments are as follows:

- **Level I: Unsatisfactory Academic Performance** – students are inadequately prepared for the following course.
- **Level II: Satisfactory Academic Performance** – students are sufficiently prepared for the next course.
- **Level III: Advanced Academic Performance** – students are well prepared for the following course.

Figure 2 shows the percent of students that met the satisfactory standard for the 2013 STAAR EOC assessments by CTE status and subject. Given that the U.S. History EOC assessment was still in field test stage and the numbers across student groups were very small, U.S. History EOC results were not presented in this report. Results are presented at the Phase-in 1 standard.

Figure 2. Percent Met Satisfactory by CTE Status and EOC Subject, spring 2013.



- For the 2013 Algebra I EOC, the percent of students who met the satisfactory phase-in 1 standard ranged from 74 percent to 66 percent, with the highest percentage being that of CTE 2 students. Larger percentages of students met the satisfactory standard on the 2013 Biology EOC (passing percentages ranging from 86 percent to 81 percent), again with a higher percentage of CTE 2 students meeting the standard. The percentage of CTE 2 students who met the satisfactory standard for the STAAR EOC was higher for English I-Reading and Writing and for English II-Reading and Writing (see Figure 2, page 11) than for the other comparison groups.

- **Table 4** (page 21) shows the percent of CTE 2, CTE 3, and non-CTE students who met the satisfactory and advanced levels by STAAR EOC subject for 2012 and 2013 (see page 20). The percentage of CTE 2 students meeting the satisfactory standard consistently was higher across subjects in 2012 and 2013, with one exception. The percentage of CTE 3 students (63 percent) meeting the satisfactory phase-in 1 standard on the 2012 English II-Reading assessment was higher than the percentage met by CTE 2 student (62 percent) and non-CTE students (52 percent).

- Similar results were found when examining the percentages of students meeting the advanced standard on the 2012 and 2013 EOC assessments by subject. Across the majority of subjects, the percentage of CTE 2 students meeting the advanced standard continued to be larger in both school years (Table 4, page 21). For the 2013 English I-Writing EOC, the percentage of CTE 2 and non-CTE students was the same, with 2 percent of students meeting the advanced standard. There was also a one-point percentage difference between non-CTE students (3 percent) and CTE 2 students (2 percent) on the 2013 English II-Writing EOC.

TAKS

The following TAKS results are for CTE 2, CTE 3, and non-CTE students in grades 10 and 11 during the 2011–2012 school year and grade 11 during the 2012–2013 school year. The results are presented because CTE students remain under the TAKS graduation requirements during the respective school years.

- The percent of CTE 2 and CTE 3 students passing the math TAKS was higher than the percent passing for non-CTE students from 2012 to 2013 (see **Figure 3**, page 13). Although the passing rates remained lower for non-CTE students compared to CTE 2 and CTE 3 students, non-CTE students TAKS math passing rates increased from 79 percent to 85 percent from 2012 to 2013. During the same time period, CTE 2 student performance increased by eight percentage points and CTE 3 student performance increased by seven percentage points.

- For the spring of 2013, CTE 3 students had the highest percentage of students passing the TAKS English Language Arts (ELA) test, with 96 percent meeting the passing standard. Approximately, 94 percent of CTE 2 students met the passing standard on the 2013 TAKS ELA test, while 91 percent of non-CTE students met the ELA passing standard. The same trend was also found in spring 2012 (see **Figure 4**, page 13).

Figure 3. English TAKS math performance for CTE 2 and CTE 3 students compared to non-CTE students, spring 2012 and spring 2013.

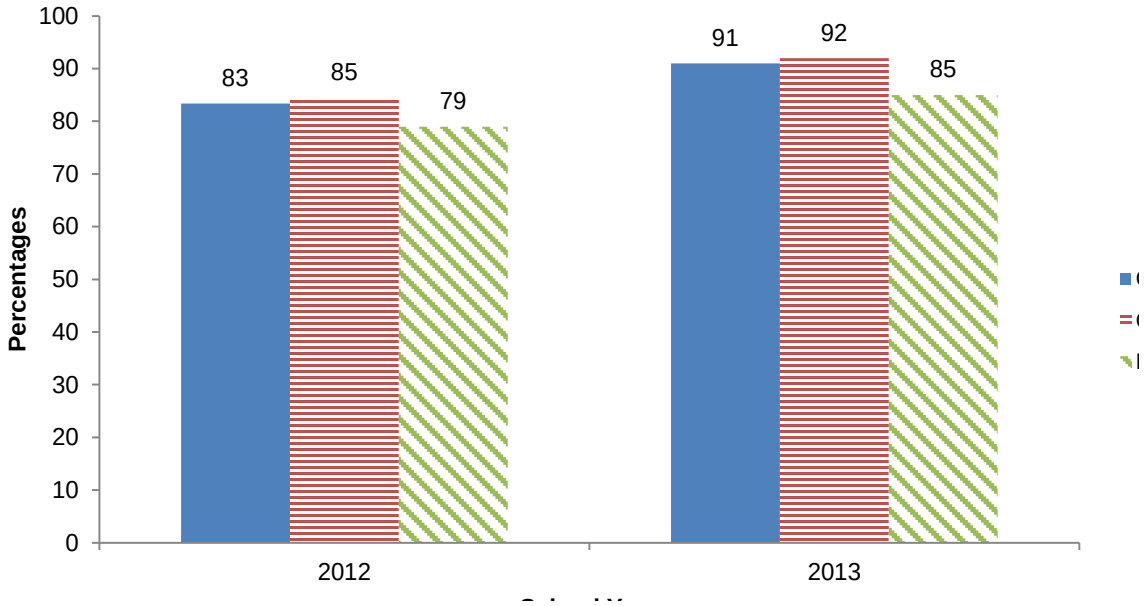
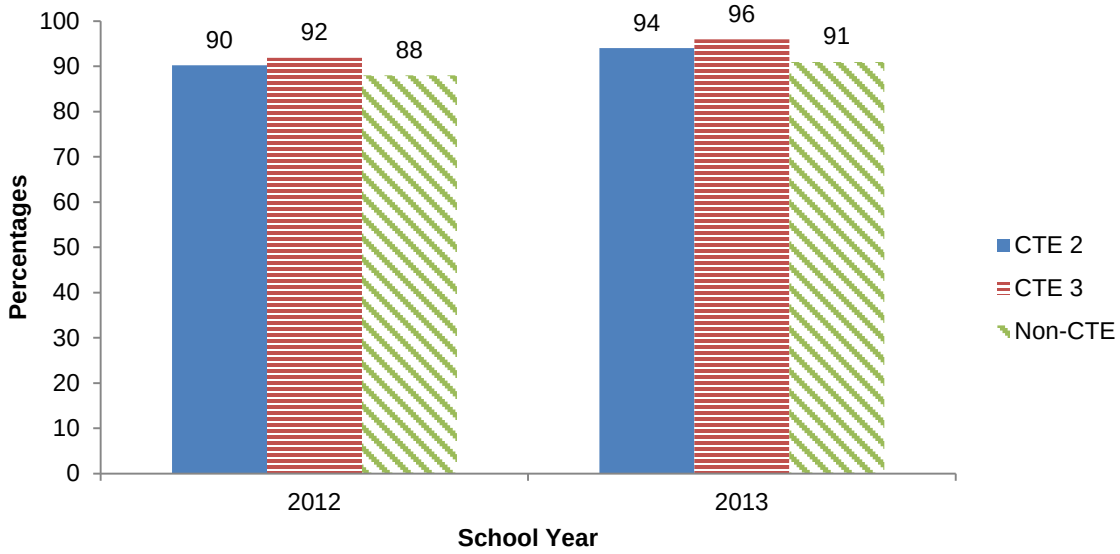


Figure 4. English TAKS English Language Arts (ELA) performance for CTE 2 and CTE 3 students compared to non-CTE students, spring 2012 and spring 2013.



- The percentage of CTE 2 and CTE 3 students (96 percent) meeting the passing standard on the science test of the 2013 TAKS matched, while 92 percent of non-CTE students met the passing standard. For 2012, the passing percentages were 84 percent for CTE 2 students, 86 percent for CTE 3 students, and 80 percent for non-CTE students. From 2012 to 2013, the passing percentages increased on the TAKS science test for all CTE and non-CTE students (**Table 5**, page 22).

- Regarding the 2012 and the 2013 TAKS social studies performance, the percent of students meeting the passing standard increased slightly for CTE 2 students (97 percent vs. 98 percent) and CTE 3 students (97 percent vs. 99 percent), with CTE 2 and CTE 3 students outperforming the non-CTE students (**Table 5**, page 22). Non-CTE students remained the same with 95 percent of students passing the 2012 and 2013 TAKS social studies tests.

What were the graduation and annual dropout rates rates for students enrolled in the CTE program compared to HISD students over the past two years, 2010–2011 to 2011–2012?

Graduation Rates

The graduation counts for twelfth-grade students coded as CTE 2 (coherent sequence) and CTE 3 from the 2010–2011 to the 2011–2012 school years are presented in **Figure 5** (see page 15). Graduation rates are available for the previous school year and prior years; therefore, 2012–2013 graduation rates will be available during the 2013–2014 school year. Students who took CTE courses as general electives and coded as CTE 1 are not included.

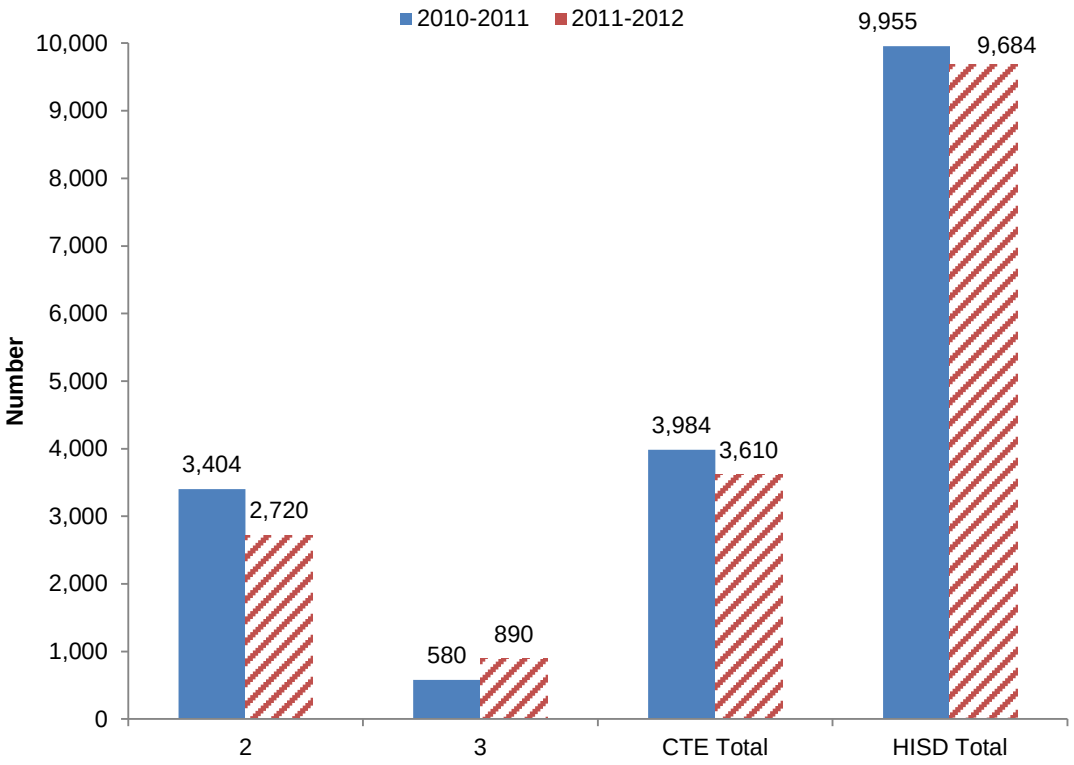
- The total number of CTE graduates decreased over the two-year period, from 3,984 graduates in the spring of 2011 to 3,610 graduates in the spring of 2012 (9.4 percent). From spring 2011 to spring 2012, the number of HISD graduates also decreased from 9,955 to 9,684, which was a 2.7 percent decrease. For spring 2012, 37.3 percent of all HISD graduates were CTE students (coded 2 or coded 3).

- The number of CTE 2 graduates decreased by 20.1 percent, from 3,404 in the spring of 2011 to 2,720 in the spring of 2012. During the same time period, the number of CTE 3 graduates increased from 580 to 890 (53.4 percent).

Twelfth-grade students earn one of three diploma distinctions based on the level and quantity of credits acquired during high school. These three diploma types are Regular/Minimum, Recommended, and Distinguished Achievement. Students receiving special education services who complete their Individualized Education Plan at the end of their four years in high school also receive a diploma.

- In the spring of 2011, the largest percentage of CTE 2 graduates (77.9 percent) and CTE 3 graduates (83.6 percent) earned the Recommended diploma distinction. These percentages were very comparable with the district, which 75.8 percent of graduates earned the Recommended diploma distinction. This trend remained the same in the spring 2012. The majority of CTE 2 graduates (78.6 percent) and CTE 3 graduates (80.8 percent) earned the Recommended diploma distinction (**Table 6**, page 22).

Figure 5. Number of graduates by CTE code, CTE total, and HISD totals, spring 2011 and spring 2012.



Longitudinal Graduation Rates

The longitudinal graduation rate represents the percentage of students from a class of first-time ninth graders who complete their high school education by their anticipated graduation date (Texas Education Agency, 2011). **Figure 6** (see page 16) displays the four-year longitudinal graduation rates for CTE (codes 2 and 3 combined) and HISD students for the 2011 and 2012 graduating classes.

- The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period slightly increased from 2011 to 2012 (90.2 percent for the class of 2011 vs. 90.4 percent for the class of 2012). Similarly, the percentage of HISD students from the ninth-grade cohort graduating from high school in a four-year period slightly increased (78.5 percent for the class of 2011 vs. 78.8 percent for the class of 2012). For each year displayed, the percentage of CTE students graduating from high school in the four-year period was higher than that of the district.

Annual Dropout Rates

Figure 7 (page 16) presents the annual dropout rates (grades 9 through 12) for CTE (codes 2 and 3 combined) and HISD students for the 2010–2011 and the 2011–2012 school years. The annual dropout rate (reported in percentages) is the number of students that dropped out of school in grades 9 through 12 in a particular school year divided by the number of students enrolled in that particular school year. From 2010–2011 to 2011–2012, the annual dropout rates of CTE and HISD students slightly increased, however, the annual dropout rates for CTE students remained lower than the annual dropout rates for HISD students.

- In 2010–2011, the annual dropout rate of the CTE students (codes 2 and 3) was 2.4 percent and increased to 2.8 percent in 2011–2012. The annual dropout rates for HISD students was 4.3 percent in 2010–2011 and increased to 4.8 percent in 2011–2012.

Figure 6. CTE (codes 2 and 3 combined) and HISD four-year longitudinal graduation rates based on ninth grade cohorts, 2011–2012.

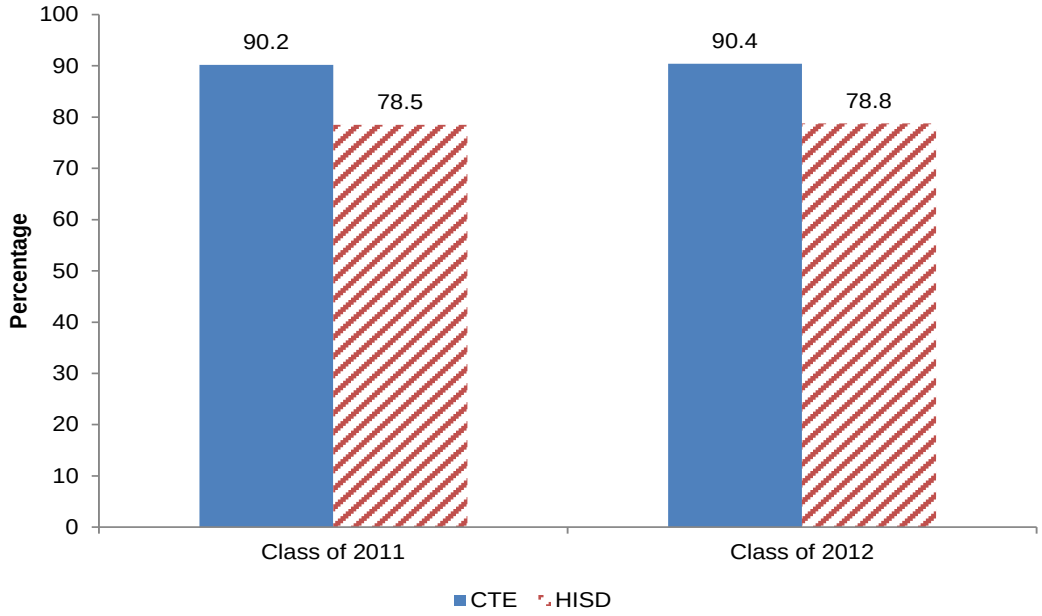
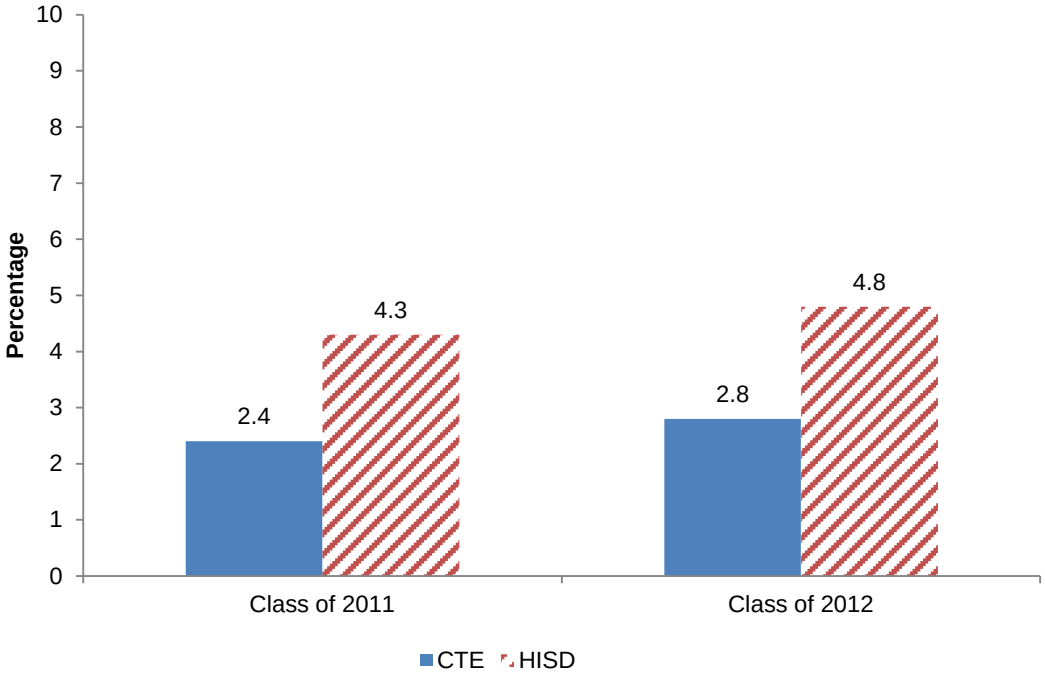


Figure 7. CTE (codes 2 and 3 combined) and HISD Annual Dropout Rates, Grades 9 through 12, 2011–2012



Discussion

The HISD CTE program offers career concentration courses and career pathways in which students are equipped with the academic and technical skills necessary to enter the workforce and/or continue their education at the post-secondary level after graduation. Exposure to a variety of CTE programs and courses allows students to explore their career options and gain mastery of career-related subject matter. Within their selected career concentrations, many CTE students are able to earn certifications and/or licenses as evidence of their mastery. Participation in CTE student organizations fosters the development of leadership and other needed skills to succeed in post-secondary training and in the workforce.

On the STAAR EOC subject assessments, larger percentages of CTE 2 students met the satisfactory and advanced passing standard for 2012 and 2013 than the percentages met by CTE 3 and non-CTE students. In addition, CTE 2 and CTE 3 students were found to outperform their non-CTE counterparts on the 2012 and 2013 TAKS ELA, mathematics, science, and social studies tests. The higher performance by CTE students supports the belief that involvement in the CTE program can be academically-beneficial for students (Castellano, Sundell, Overman, and Aliaga, 2012). The report also noted the total number of CTE graduates decreased by 9.4 percent from 2011–2012 to 2012–2013 while the number of district graduates also decreased by 2.7 percent. Approximately, 37.3 percent of all HISD graduates were CTE students.

The CTE program aligns with HISD's strategic direction, which focuses on the core initiative: Rigorous Instructional Standards and Supports. Currently, the CTE program offers rigorous academic and technical curricula, career counseling, business partnerships, as well as out-of-classroom learning experiences for students. The CTE program must continue to commit to a variety of programming and opportunities for students to develop their career knowledge and skills.

References

Castellano, M., Sundell, K., Overman, L. & Aliaga, O. (2012). Do career and technical education programs of study improve student achievement? Preliminary analyses from a rigorous longitudinal study. International Journal of Educational Reform, 21, 98-118.

Houston Independent School District. (2010). Career and Technical Education Program. Retrieved from http://www.houstonisd.org/portal/site/CareerTech.

Texas State Plan for Career and Technical Education, 2008–2013. (2007). Retrieved August 4, 2008 from ritter.tea.state.tx.us/cte/Accountability/StatePlanFinal111607.pdf.

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Table 1. Student Enrollment by CTE Codes, 2011–2012 through 2012–2013		
	2011–2012	**2012–2013**
Total HISD Student Enrollment (6th-12th)	87,244	87,418
Number of CTE Students Coded 1	16,842	14,337
Number of CTE Students Coded 2	12,283	14,858
Number of CTE Students Coded 3	3,830	2,676
Total Number of CTE Students	32,955	31,871

Note: Data retrieved from TEA PEIMS, Oct. 2011 – Oct. 2012.

Table 2. District and CTE (Codes 1, 2, and 3) Course Enrollment by Student Groups*, 2011–2012 and 2012–2013

Subgroup	Academic Year			
	2011–2012		2012–2013	
	N	%	N	%
Total HISD Student Enrollment (6th-12th)	87,244	100.00	87,418	100.00
Gender				
Female	42,771	49.0	42,871	49.0
Male	44,473	51.0	44,547	51.0
Ethnicity				
American Indian	240	<1.0	211	<1.0
Asian	3,028	3.5	3,074	3.5
African-American	23,504	26.9	22,795	26.1
Hispanic	51,886	59.5	52,476	60.0
White	7,836	9.0	8,068	9.2
Two or More	613	<1.0	668	<1.0
Economically Disadvantaged	65,502	75.1	65,203	74.6
At Risk	50,631	58.0	43,481	49.7
Special Education	8,770	10.0	8,623	9.9
Limited English Proficiency	11,390	13.1	11,649	13.3
Gifted & Talented (G/T)	13,523	15.5	13,882	15.9
Total CTE Student Enrollment	32,955	100.0	31,871	100.0
Gender				
Female	16,157	49.0	15,648	49.1
Male	16,798	51.0	16,223	50.9
Ethnicity				
American Indian	108	<1.0	78	<1.0
Asian	981	3.0	959	3.0
African-American	9,592	29.1	8,982	28.2
Hispanic	19,898	60.4	19,559	61.4
White	2,140	6.5	2,072	6.5
Two or More†	169	<1.0	158	<1.0
Economically Disadvantaged	24,839	75.4	23,877	74.9
At Risk	21,049	63.9	17,855	56.0
Special Education	2,955	9.0	2,844	8.9
Limited English Proficiency	2,762	8.4	2,794	8.8
Gifted & Talented (G/T)	4,347	13.4	4,658	14.6

Note: Data retrieved from TEA PEIMS, October 2012 – October 2013.
* District enrollment numbers reflect only students in grades 6 through 12, grades where students are eligible to enroll in CTE courses.

Table 3. Certifications /Licenses Earned by CTE 2 and CTE 3 Students, 2012–2013	
CERTIFICATION	**N**
A+ Certification	1
ACA (Photoshop)	1
ASE Certified Oil Change Mechanic	292
ASE Electrical/Electronic Systems (A6)	27
ASE Engine Performance (A8)	22
ASE Engine Repair (A1)	37
Automated External Defibrillator	103
Basic Municipal or County Jailer	48
Basic Telecommunication	43
Certified Logistics Associate (CLA)	15
Certified Logistics Technician (CLT)	5
Criminal Justice Assessment	79
Cyber Ethics	35
Digital Forensics Basics	15
EverFi Certified	3223
First Responder Certification	53
IC3	7
Information Security for Everyone	56
Microsoft Office Expert – Excel	1
Microsoft Office Expert – Word	18
Microsoft Office Master	1
NATEF Automotive Technician	24
NATEF Electrical/Electronic Systems (A6)	13
NATEF Engine Performance (A8)	16
NATEF Engine Repair (A1)	26
NATEF Heating and Air Condition (A7)	10
OSHA Ten Hour Safety Certification	230
SP/2 Collision Pollution Prevention	39
SP/2 Collision Safety	51
SP/2 Hazardous Materials Training-Auto Dealer	166
SP/2 Heavy-Duty Fleet Pollution Prevention	38
SP/2 Heavy-Duty fleet safety	27
SP/2 Mechanical Pollution Prevention	182
SP/2 Mechanical Safety	237
SP/2 Supervisor course	39
TEEN COMMUNITY EMERGENCY RESPONSE TEAM	166
Terrorism Awareness for Emergency 1st Responders	33
Grand Total	**5,379**

Table 4. Percent Met Satisfactory and Advanced by STAAR EOC Subject and CTE Status, Spring 2012 and Spring 2013

		N Tested		% Satisfactory		% Advanced	
	EOC	2012	2013	2012	2013	2012	2013
CTE 2	Algebra I	1,644	2,753	80	74	7	8
	Biology	2,505	3,899	91	86	11	13
	English I-Reading	2,569	4,237	73	67	9	11
	English I-Writing	2,572	4,405	61	50	4	2
	English II-Reading	181	3,918	62	78	5	20
	English II-Writing	184	3,924	34	51	2	2
CTE 3	Algebra I	456	155	79	66	6	5
	Biology	595	185	85	82	5	5
	English I-Reading	614	167	62	65	5	5
	English I-Writing	614	171	50	34	2	0
	English II-Reading	99	426	63	66	3	9
	English II-Writing	101	431	32	37	0	1
Non-CTE	Algebra I	5,840	5,724	72	67	6	5
	Biology	6,749	7,816	83	81	8	11
	English I-Reading	7,828	8,027	56	56	5	8
	English I-Writing	7,833	8,223	44	40	2	2
	English II-Reading	90	5,802	52	67	3	16
	English II-Writing	86	5,824	27	42	0	3

Source: Data Warehouse, Phase-in 1 Standard

Table 5. CTE 2, CTE 3, and Non-CTE English TAKS Performance, Spring 2012 and Spring 2013

	Academic Year			
	2012		2013	
	# Tested	% Passing	# Tested	% Passing
Mathematics				
CTE 2	5,588	83	3,056	91
CTE 3	1,898	85	954	92
Non-CTE	12,010	79	4,697	85
ELA				
CTE 2	5,657	90	3,066	94
CTE 3	1,904	92	957	96
Non-CTE	12,171	88	4,678	91
Science				
CTE 2	5,598	84	3,052	96
CTE 3	1,900	86	954	96
Non-CTE	12,020	80	4,710	92
Social Studies				
CTE 2	5,525	97	3,056	98
CTE 3	1,891	97	955	99
Non-CTE	11,915	95	4,699	95

Note: Data retrieved from TEA TAKS, 2012–2013

Table 6. Percent of CTE Graduates by Diploma Type, Spring 2011 and Spring 2012

CTE Code	Type of Diploma	2011		2012	
		N	%	N	%
2	Completion of Individualized Education Plan	121	3.6	111	4.1
	Regular/Minimum	440	12.9	381	14.0
	Recommended	2,651	77.9	2,137	78.6
	Distinguished Achievement	192	5.6	91	3.3
	Total	**3,404**	**100.0**	**2,720**	**100.0**
3	Completion of Individualized Education Plan	18	3.1	29	3.3
	Regular/Minimum	58	10.0	93	10.4
	Recommended	485	83.6	719	80.8
	Distinguished Achievement	19	3.3	49	5.5
	Total	**580**	**100.0**	**890**	**100.0**
HISD	Completion of Individualized Education Plan	458	4.6	600	6.2
	Regular/Minimum	1,423	14.3	1,362	14.1
	Recommended	7,545	75.8	7,126	73.6
	Distinguished Achievement	529	5.3	596	6.1
	Total	**9,955**	**100.0**	**9,684**	**100.0**

Note: Data retrieved from Graduates file 2011 and 2012

APPENDIX A
Career Concentrations and Related Courses*, 2012–2013

Career Concentration	Sample of Related Courses
Agriculture, Food & Natural Resources	Animal Science Applied Agricultural Science And Technology Floral Design And Interior Landscape Development
Architecture & Construction	Introduction to Construction Careers Piping Trades/Plumbing I Mill and Cabinetmaking I
Audio/Visual Technology and Communications	Advertising Design I Media Technology I Textile and Apparel Design
Business, Management and Administration	Administrative Procedures I Business Communications; Business Law
Education and Training	Child Development Child Care and Guidance, Management, and Services I
Finance	Accounting I Banking and Financial Systems
Health Science	Health Science Technology Medical Terminology; Pharmacology
Hospitality and Tourism	Culinary Arts I Hospitality Services I Hotel Management
Human Services	Consumer and Family Economics Introduction to Cosmetology Personal and Family Development
Information Technology	Business Computer Information Systems I Introduction to Computer Maintenance Keyboarding
Law, Public Safety, Corrections and Security	Courts and Criminal Procedure Criminal Investigation Emergency Communications
Manufacturing	Metal Trades I Technology Systems Welding I
Marketing, Sales and Service	Advertising Entrepreneurship Marketing Dynamics Professional Selling
Science, Technology, Engineering and Mathematics	Technical Introduction to Computer-Aided Drafting Introduction to Electrical/Electronic Careers Introduction To Engineering Design
Transportation, Distribution and Logistics	Automotive Technician I Introduction To Transportation Service Careers

* Complete listing of courses can be found at http://www.houstonisd.org/portal/site/CareerTech.