

**MEMORANDUM**

November 8, 2010

TO: Board Members

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

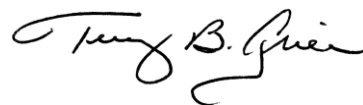
SUBJECT: **CAREER AND TECHNICAL EVALUATION REPORT**

CONTACT: Carla Stevens, (713) 556-6700

Attached is the 2009–2010 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 three years, 2007–2010, 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, one hundred and sixty-five different CTE courses offered at 67 schools (29 high schools and 38 middle schools) throughout the district in 2009–2010.

From spring 2008 through spring 2010, CTE 2 students (those enrolled in a coherent sequence of courses) outperformed CTE 3 (Tech Prep students) and non-CTE students on all subject areas of the TAKS. When analyzing the longitudinal graduation rates, the percentages of CTE students graduating from high school in a four-year period were higher than those of the district in the class of 2007 (79.4 percent versus 64.3 percent), in the class of 2008 (84.7 percent versus 68.2 percent) and in the class of 2009 (87.2 percent versus 70.0 percent).

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



TBG

TBG/CS:kt

cc: Superintendent's Direct Reports  
Chief Schools Officers  
Kim Hall  
Rosena Garcia  
Steve Allen

# RESEARCH

**Educational Program Report**



## Career and Technical Education 2009–2010



## 2010 Board of Education

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## EXECUTIVE SUMMARY

### CAREER AND TECHNICAL EDUCATION 2009–2010

#### Program Description

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 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 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. 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. 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 the Tech Prep program (coded as CTE 3 participants).

The Texas Education Agency (TEA) has identified the following career concentrations:

- Agriculture, Food and Natural Resources;
- Architecture and Construction;
- Audio/Visual 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 TEA envisions a comprehensive plan of action for CTE that acknowledges the fact that the state is facing a time of great demographic and economic change.

The public education systems must take immediate action by addressing the following challenges:

- Recognize the unique needs of a diverse student population;
- Prepare students for college and career success;
- Provide students with a quality education that prepares them to be competitive within a global economy; and
- Recruit and retain qualified teachers.” (CTE State Plan, 2007, p.2)

The State Plan for Career and Technical Education, 2008–2013 (referred to as 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 technology education should complement and enhance academic preparation by enabling students to apply learned principles to a variety of family, community, and career situations.

### **Purpose of Evaluation**

The purpose of this evaluation report was to summarize the CTE program components and course offerings. In addition, demographic characteristics, test performance, graduation rates, and dropout rates were presented for students enrolled in CTE courses over the last three school years, (2007–2008 through 2009–2010).

### **Key Findings**

1. What were the demographic characteristics of students enrolled in the CTE program over the past three years, 2007–2010?
  - Over the past three years, HISD student enrollment in grades six through twelve has fluctuated from 86,987 students in 2007–2008, down to 86,194 students in 2008–2009, and up to 87,576 in 2009–2010. The CTE program experienced a consistent reduction in enrollment over the three-year period of 5.6 percent, from 35,638 students in 2007–2008 to 33,634 students in 2009–2010.
  - The number of students enrolled in CTE 1 courses as elective-takers decreased from 21,618 in 2007–2008 to 19,809 in 2009–2010, which was an 8.4 percent decline. During the same time period, the numbers of CTE 2 students fluctuated, starting at 13,864 in 2007–2008, declining to 11,880 in 2008–2009, and increasing to 12,542 in 2009–2010. The number of CTE students coded in the Tech Prep program (code = 3) increased from 156 students in 2007–2008 to 1,289 students in 2008–2009. The enrollment remained relatively constant in 2009–2010 with 1,283 students in the Tech Prep program.

2. What were the CTE program components and course offerings implemented in HISD in 2009–2010?

- CTE program components included course offerings, certifications/licenses, career and technical student organizations, college credit for CTE students, career preparation, internships, job shadowing, and Tech Prep.
- One hundred and sixty-five different CTE courses were offered at 67 schools (29 high schools and 38 middle schools) throughout the district. These courses cover the career concentrations (listed on page 1) identified by the TEA. The CTE program provided students opportunities to learn about their career pathways within the classroom setting and through internships in work-based learning environments. The most popular career concentrations in the district for 2009–2010 were (1) Information Technology, (2) Health Science, (3) Human Services, (4) Marketing, Sales, and Services, and (5) Science, Technology, Engineering, and Mathematics.

3. What were the certifications/licenses earned by students enrolled in the CTE program in 2009–2010?

A total of 3,942 certifications and/or licenses were earned in 34 different specialization areas. The largest number of certifications was earned in the area of Microsoft Certified Applications Specialist-WORD, with 1,181 students earning this certification.

4. What were the trends in Texas Assessment of Knowledge and Skills (TAKS) performance of students enrolled in the CTE program as compared to HISD students over the past three years, 2008–2010?

- From spring 2008 through spring 2010, CTE 2 and CTE 3 students outperformed non-CTE students on all subject areas of the TAKS.
- From the 2008 spring administration of the TAKS to the 2010 spring administration, the percent of CTE 2 and CTE 3 students passing the math test of the TAKS was higher than the percent passing of non-CTE students. Specifically, in 2010, the percentage of CTE 3 students passing the math test was 15 percentage points higher than the passing rate of non-CTE students (83 percent vs. 68 percent), while the percentage of CTE 2 students that passed the TAKS math test was 13 percentage points higher than the non-CTE students (81 percent vs. 68 percent). Similar results were found in 2008 and 2009.
- From spring 2008 through spring 2010, the TAKS passing rates of CTE students who were classified as economically disadvantaged and those enrolled in Tech Prep surpassed TEA acceptable performance levels on all subject tests.

5. What were the graduation and annual dropout rates for students enrolled in the CTE program as compared to HISD students over the past three years, 2006–2007 to 2008–2009?

- The total number of CTE graduates increased from spring 2007 to spring 2009, from 3,026 graduates in the spring of 2007 to 3,342 graduates in the spring of 2009. The number of CTE 2 graduates increased slightly from 2,985 in the spring of 2007 to 3,103 in the spring of 2009. The number of CTE 3 graduates increased substantially from 41 graduates in spring 2007 to 239 in the spring of 2009. During the same time period, the number of HISD graduates increased from 7,645 to 8,595.

- The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period increased steadily from 2007 to 2009, starting at 79.4 percent in 2007, increasing to 84.7 percent in 2008, and up to 87.2 percent in 2009. Similarly, the percentage of HISD students from the ninth-grade cohort graduating from high school in a four-year period increased over the three-year period from 64.3 percent in 2007, to 68.2 percent in 2008, and to 70.0 percent in 2009.
- From 2006–2007 to 2008–2009, the annual dropout rates of CTE students and HISD steadily decreased. In 2006–2007, the annual dropout rate of the CTE students (codes 2 and 3) was 4.3 percent, went down to 2.0 percent in 2007–2008, and decreased again to 1.5 percent in 2008–2009. The annual dropout rates for HISD students was 7.2 percent (2006–2007), 4.8 percent (2007–2008), and 3.3 percent (2008–2009). For the three school years analyzed, the annual dropout rates for CTE students remained lower than the annual dropout rates for HISD students.

## **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 be made to increase the enrollment of ninth and tenth-grade students in a coherent sequence (CTE 2) of courses and in the Tech Prep program (CTE 3). 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.

## **Career and Technical Education 2009– 2010**

### **Program Description**

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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 department also 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 the Tech Prep program (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:

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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.

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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.

### **Purpose of Evaluation**

The purpose of this evaluation report was to summarize the CTE program components and course offerings. In addition, demographic characteristics, test performance, and graduation rates were presented for students enrolled in CTE courses over the last three school years, (2007–2008 through 2009–2010).

The following evaluation questions were addressed:

1. What were the demographic characteristics of students enrolled in the CTE program over the past three years, 2007–2010?
2. What were the CTE program components and course offerings implemented in HISD in 2009–2010?
3. What were the certifications/licenses earned by students enrolled in the CTE program in 2009–2010?
4. What were the trends in Texas Assessment of Knowledge and Skills (TAKS) performance of students enrolled in the CTE program as compared to HISD students over the past three years, 2008–2010?
5. What were the graduation and annual dropout rates for students enrolled in the CTE program as compared to HISD students over the past three years, 2006–2007 to 2008–2009?

### **Program Funding**

The CTE program is funded through the Carl D. Perkins Vocational and Technical Education Act of 1998. Texas’ Perkins funds enhance the state’s efforts to ensure that students pursue a rigorous course of study by providing support for districts to implement programs such as Project Lead the Way, and the

Advanced Technical Credit statewide articulation program. Local education agencies, including HISD, who accept Perkins funds, must utilize those funds to conduct the following activities:

- Strengthen the academic and technical skills of CTE students by integrating academics with CTE programs through a coherent sequence of courses;
- Provide students with strong experience and understanding of all aspects of an industry;
- Develop, improve, or expand the use of technology in CTE, through training of personnel to use state-of-the-art technology; providing CTE students with the academic and technical skills to enter into the high technology and telecommunications fields; or encouraging schools to work with high technology industries that offer voluntary internships and mentoring programs;
- Provide professional development programs to teachers, counselors, and administrators in state-of-the-art CTE programs and techniques;
- Initiate, improve, expand, and modernize quality career and technology programs;
- Provide services and activities that are of sufficient size, scope, and quality to be effective;
- Link secondary career and technical education and postsecondary career and technical education, including implementing tech prep programs; and
- Develop and implement evaluations of the vocational and technical education programs carried out with funds under this title, including an assessment of how the needs of special populations are being met (CTE State Plan, 2007).

## Methods

### Data Collection

Descriptive data, including student demographic characteristics 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 CTE courses as part of a state approved Tech Prep plan of study received a code of 3. Enrollment numbers were collected based on total CTE participation as well as by code participation. Graduation and annual dropout rates were gathered from Texas Education Agency's district files. Certification and work-based learning site data were obtained through discussions with CTE personnel, while the Career and Technical Education website (HISD, 2008) provided details about the program and curriculum.

Quantitative analysis was accomplished using results from the Texas Assessment of Knowledge and Skills (TAKS) database. TAKS results were used in this report since it is a criterion-referenced test, specifically developed to reflect good instructional practices and to measure student learning. TAKS is vertically aligned with the Texas Essential Knowledge and Skills (TEKS) curriculum. TAKS was administered for the first time in the spring 2003 as a means to monitor student performance. The English language version measures academic achievement in reading at grades 3–9; English language arts at 10 and 11; writing at grades 4 and 7; social studies at grades 8, 10, and 11; and science at grades 5, 8, 10 and 11. Students in the 11<sup>th</sup> grade are required to take and pass an exit-level TAKS in all four subjects in order to graduate.

## Results

### What were the demographic characteristics of students enrolled in the CTE program over the past three years, 2007–2010?

The HISD enrollment numbers and CTE student enrollment by codes are shown in **Table 1** (see page 8). These codes are based on the number of students eligible to participate in the CTE program, which are

Table 1. Student Enrollment and Student by CTE Codes, 2007–2008 through 2009–2010

	2007–2008	2008–2009	2009–2010
<b>Total HISD Student Enrollment (6<sup>th</sup>-12<sup>th</sup>)</b>	86,987	86,194	87,576
<b>Number of CTE Students Coded 1</b>	21,618	21,071	19,809
<b>Number of CTE Students Coded 2</b>	13,864	11,880	12,542
<b>Number of CTE Students Coded 3</b>	156	1,289	1,283
<b>Total Number of CTE Students</b>	35,638	34,240	33,634

Note: Data retrieved from TEA PEIMS, Oct. 2007 – Oct. 2009.

students in grades six through twelve. Over the past three years, HISD student enrollment in grades six through twelve has fluctuated from 86,987 students in 2007–2008, down to 86,194 students in 2008–2009, and up to 87,576 in 2009–2010. The CTE program experienced a reduction in enrollment over the three-year period of 5.6 percent, from 35,638 students in 2007–2008 to 33,634 students in 2009–2010.

The number of students enrolled in CTE 1 courses as elective-takers decreased from 21,618 in 2007–2008 to 19,809 in 2009–2010, which was an 8.4 percent decline. During the same time period, the numbers of CTE 2 students fluctuated, starting at 13,864 in 2007–2008, declining to 11,880 in 2008–2009, and increasing to 12,542 in 2009–2010. The number of CTE students coded in the Tech Prep program (code = 3) increased from 156 students in 2007–2008 to 1,289 students in 2008–2009. The enrollment remained relatively constant in 2009–2010, with 1,283 students in the Tech Prep program.

**Table 2** (see page 9) presents the district and CTE enrollment of students by subgroups. According to Table 2, the percentage of economically-disadvantaged students within the district has slightly increased from 2007–2008 to 2009–2010 (72.0 percent to 72.7 percent). The percentage of economically-disadvantaged students enrolled in CTE courses has increased during this three-year period (71.9 percent to 73.5 percent). From 2007–2010, the district’s percentage of special education students decreased consistently from 12.1 percent to 11.0 percent; while the percentage of students enrolled in CTE courses who received special education services slightly decreased from 10.7 percent to 10.1 percent. The percentage of students identified as LEP districtwide increased over the three school years, starting at 13.7 percent in 2007–2008 and increasing to 14.6 percent in 2009–2010. During the three-year period, the percentage of students identified as LEP within CTE courses slightly decreased (9.8 percent to 9.3 percent). The district enrollment of students identified as gifted and talented slightly increased from 2007–2008 to 2009–2010 (14.2 percent to 14.5 percent). This trend was also found for the percentage of students enrolled in CTE courses identified as gifted and talented, with a slight increase from 11.6 percent in 2007–2008 to 12.0 percent in 2009–2010.

The demographic percentages of the CTE students closely reflect those of the district for students in grades 6 through 12. The exceptions are the higher percentages of African-American students in CTE (32.6 percent vs. 29.4 percent) and the lower percentages of LEP (9.3 percent vs. 14.6 percent) and Special Education (12.0 percent vs. 14.5 percent).

### **What were the CTE program components and course offerings implemented in HISD in 2009–2010?**

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.

Table 2. District and CTE Course Enrollment by Student Groups\*, 2007–2008 Through 2009–2010

Subgroup	Academic Year					
	2007–2008		2008–2009		2009–2010	
	N	%	N	%	N	%
<b>Total HISD Student Enrollment (6<sup>th</sup>-12<sup>th</sup>)</b>	86,987	100.0	86,194	100.0	87,576	100.00
Gender						
Female	42,992	49.4	42,430	49.2	42,967	49.0
Male	43,995	50.6	43,764	50.8	44,609	51.0
Ethnicity						
American Indian	66	<1.0	54	<1.0	89	<1.0
Asian	3,059	3.5	3,098	3.6	3,170	3.6
African-American	26,681	30.7	25,895	30.0	25,776	29.4
Hispanic	49,085	56.4	49,436	57.4	50,802	58.0
White	8,096	9.3	7,711	8.9	7,739	8.9
Economically Disadvantaged	62,598	72.0	65,369	75.8	63,689	72.7
At Risk	52,225	60.0	53,912	62.5	53,642	61.3
Special Education	10,499	12.1	10,025	11.6	9,667	11.0
Limited English Proficiency	11,923	13.7	12,693	14.7	12,749	14.6
Gifted & Talented (G/T)	12,383	14.2	12,290	14.3	12,684	14.5
<b>Total CTE Student Enrollment</b>	35,638	100.0	34,240	100.0	33,634	100.0
Gender						
Female	17,751	49.8	16,797	49.1	16,502	49.1
Male	17,887	50.2	17,443	50.9	17,132	50.9
Ethnicity						
American Indian	25	<1.0	15	<1.0	33	<1.0
Asian	1,084	3.0	1,030	3.0	1,000	3.0
African-American	12,157	34.1	11,490	33.5	10,969	32.6
Hispanic	19,836	55.7	19,302	56.4	19,262	57.3
White	2,536	7.1	2,403	7.0	2,370	7.0
Economically Disadvantaged	25,619	71.9	26,201	76.5	24,737	73.5
At Risk	22,706	63.7	22,701	66.3	21,324	63.4
Special Education	3,799	10.7	3,665	10.7	3,383	10.1
Limited English Proficiency	3,506	9.8	3,494	10.2	3,139	9.3
Gifted & Talented (G/T)	4,121	11.6	3,753	11.0	4,044	12.0

Note: Data retrieved from TEA PEIMS, October 2007 – October 2009.

\* District enrollment numbers reflect only students in grades 6 through 12, grades where students are eligible to enroll in CTE courses.

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. The CTE program components include the following (listed alphabetically):

### *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 beauticians, automotive mechanics, and several business-related fields.

### *College Credit for CTE Students*

There are three different kinds of courses that CTE students can take in order to earn college credit; dual credit courses, advanced technical credit courses, or Tech Prep courses. 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, while Tech Prep credit courses are developed within HISD. Both types of courses are taught by local high-school teachers who received specialized training. College credit for ATC and Tech Prep 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.

### *Tech Prep*

The Tech Prep program provides a way for students to start their technical careers in high school and complete their training in a local community college. The six-year program is a combination of four years

of high school courses, outlined in the Recommended graduation plan, and two years in a technical training program at a participating community college. The program prepares students for high-demand technical careers. At the end of the program, Tech Prep students can earn an Associate of Applied Science degree.

### **Course Offerings**

One hundred and sixty-five different CTE courses are offered at 67 HISD schools (29 high schools and 38 middle schools) throughout the district. These courses range from accounting to welding and are related to the career concentrations identified by TEA (listed on page 5). A partial listing of the CTE courses being offered in the district can be found in the **Appendix A**. For the 2009–2010 school year, the enrollment numbers of CTE 2 and CTE 3 students by secondary school and career concentration are provided in **Appendix B**. The CTE program provides a variety of courses for students to select elective classes and/or courses within career concentrations. The most popular career concentrations in the district for 2009–2010 were (1) Information Technology, (2) Health Science, (3) Human Services, (4) Marketing, Sales, and Services, and (5) Science, Technology, Engineering, and Mathematics. A full description of all CTE classes and the school locations, where each class is available, can be found in the curriculum section at the Career and Technical Education website. These courses are taken as electives or as part of a selected career concentration (HISD, 2008). The CTE specialized career programs include the following listed alphabetically and described below.

#### *Agricultural Science and Technology*

The Agricultural Science and Technology (AST) program has developed as an integral part of the CTE department in HISD. The mission of the program is to prepare students for careers, build awareness, and develop leadership for the food, fiber, and natural resource systems. Diverse course offerings make it attractive to students with varying educational goals. The AST program operates at eight high schools. These locations are Austin, Bellaire, Chavez, Lamar, Madison, Sam Houston Math, Science, and Technology Center, Worthing, and Yates. In addition, Harper Alternative School provides horticulture courses for students with disabilities. The AST program owns six farms. The farms are located near participating schools and vary in size: Madison has 35 acres, Austin and Yates share 62 acres, Bellaire, Lamar, and Lee have a total of 40 acres, and Sam Houston has 9 acres. The co-curricular activities for the AST program include membership in the student organization, Future Farmers of America (FFA), and participation in the Houston Livestock Show.

#### *Automotive Youth Educational Systems (AYES)*

Within the AYES program, 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 in the AYES program. The AYES program is available at 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.

#### *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.

### *Construction Careers*

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.

### *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.

### *Energy Industry Programs*

There are three energy academies in HISD. These academies offer courses in which CTE students can develop their interests in careers related to the energy industry. These academies are located at Milby High School (Milby Academy for Petroleum Exploration & Production Technology), Lamar High School (Lamar Global Energy Business Program), and Westside High School (Westside Engineering & Geosciences Academy). The energy academies are financially supported by the Independent Petroleum Association of America (IPAA) to assist with developing an energy workforce in Houston.

### *The High School for Law Enforcement & Criminal Justice (H.S. LE/CJ)*

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. More than 95 percent of the students at H.S. LE/CJ graduate as Texas Scholars.

### *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. The school remains committed to providing students with the very best in instruction, resources, technology, and equipment. 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.

### *Pre-Engineering Programs - Project Lead the Way (PLTW)*

For students interested in engineering, biomechanics, aeronautics, and other applied math and science arenas, PLTW is a special series of courses developed for the middle school and high school years. These courses complement math and science college preparatory programs to establish a solid background in engineering and technology. This program is sponsored by the East End Chamber of Commerce, which represents several petroleum and Houston port-related industries.

The PLTW courses are available at six campuses: César Chávez, Ebbert Furr, Westbury, Phillis Wheatley, Sam Houston, and James Madison high schools. During the spring of 2010, the PLTW program at Wheatley High school received full national certification. By earning this certification, Wheatley students in the PLTW program can earn college credit for engineering courses while still enrolled in high school. (More information can be found at [www.houstonisd.org](http://www.houstonisd.org), dated March 31, 2010.)

### *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. Computer Programming is an intensive four-year college preparatory program with emphasis on math through calculus, science through physics, and computer science. Programming techniques are taught in a number of different programming languages including C++, JAVA Script and Hypertext Markup Language (HTML). The students gain experiences on the latest microcomputer equipment with access to networks and the internet.

#### *Westbury High School 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.

#### **What were the certifications/licenses earned by students enrolled in the CTE program in 2009–2010?**

**Table 3** (see page 15) presents the certifications/licenses earned by CTE students in the 2009–2010 school year. A total of 3,942 certifications and/or licenses were earned in 34 different specialization areas. The largest number of certifications was earned in the area of Microsoft Certified Applications Specialist-WORD, with 1,181 students earning this certification. Five hundred and sixty students earned their safety certifications from the Occupational Safety and Health Administration (OSHA) and 454 students earned their Cardiopulmonary Resuscitation (CPR) certification. A total of 1,301 certifications and/or licenses were earned in 21 different specialization areas in 2008–2009. For the 2009–2010 school year, CTE personnel placed a stronger emphasis on student certifications and this resulted in an increase of 203 percent in the number of certifications earned as compared to the number earned in the previous year.

#### **What were the trends in Texas Assessment of Knowledge and Skills (TAKS) performance of students enrolled in the CTE program as compared to HISD students over the past three school years, 2008–2010?**

**Table 4** (see page 16) and **Figures 1** through **4** (see pp.17-18) display the 2008 through 2010 student performance on the English TAKS by subject test for the following student groups: CTE 2 (coherent sequence), CTE 3 (Tech Prep), and non-CTE students. Table 4 provides data for all groups. Figures 1-4 presents graphic displays by subject test. Non-CTE results are for students in grades 9 through 11.

**Figure 1** (see page 17) shows that the percent of CTE 2 and CTE 3 students passing the math standard of the TAKS was higher than the percent passing of non-CTE students from 2008 to 2010. Over the three-year period, the percentage of CTE 2 students passing the math standard of the TAKS increased from 71 percent to 81 percent. During the same time the percentage of CTE 3 students passing the TAKS math standard fluctuated from 81 percent in 2008, to 67 percent in 2009, and up to 83 percent in 2010.

**Figure 2** (see page 17) shows that the percentage of CTE 2 and CTE 3 students passing the TAKS reading/English language arts (ELA) subtest was higher than non-CTE students from 2008 to 2010. For the spring of 2008, CTE 2 and CTE 3 students had a similar percentage of students passing the TAKS

Table 3. Certifications/Licenses Earned by CTE Students, 2009–2010

	2009–2010	
	N	%
A*S*K Certification	30	0.8
A+ Certification	9	0.2
Adobe Certified Associate (ACA) - Visual Communication using Adobe Photoshop	90	2.3
Basic Telecommunication	14	0.4
Certified Customer Service Specialist	6	0.2
Cosmetology Operators License	15	0.4
CPR - Lay Responder (America Red Cross) - CPR Infant	93	2.4
CPR - Lay Responder (America Red Cross) - CPRAED Adult and Child	93	2.4
CPR- Lay Responder (American Red Cross)	454	11.5
Emergency Telecommunication	27	0.7
First Aid Certification (American Red Cross)	352	8.9
Heartsaver	29	0.7
Internet and Computing Core Certification (IC3)	14	0.4
Microsoft Certified Applications Specialist (MCAS) - ACCESS	6	0.2
Microsoft Certified Applications Specialist (MCAS) - EXCEL	134	3.4
Microsoft Certified Applications Specialist (MCAS) - OUTLOOK	7	0.2
Microsoft Certified Applications Specialist (MCAS) - POWERPOINT	473	12.0
Microsoft Certified Applications Specialist (MCAS) - WORD	1,181	30.0
NATE Certification(s) for Automotive Technician	10	0.3
NCCER CORE Certification: Introductory Craft Skills	135	3.4
Network+ Certification	3	0.1
OSHA Ten Hour Safety Certification	560	14.2
Pet First Aid and CPR (America Red Cross)	6	0.2
Pharmacy Technician	9	0.2
Public Safety Telecommunicator I (6th Edition)	21	0.5
Safety and Pollution Prevention	68	1.7
ServSafe	24	0.6
ServSafe© Certification	8	0.2
Shampoo-Conditioning Specialty Certificate	11	0.3
TCIC/NCIC	14	0.4
Texas Private Security Officer Level 1	13	0.3
Texas Private Security Officer Level 2	10	0.3
Tradesman License	9	0.2
VESTA MapStar	14	0.4
<b>Total Number of Certifications/Licenses Earned</b>	<b>3,942</b>	<b>100.0</b>

Source: HISD Department of Career and Technical Education, 2010.

reading/ ELA test, with 89 percent and 87 percent, respectively. Eighty percent of non-CTE students met the reading/ ELA test standard during the spring of 2008. This trend was similar for spring 2009 and spring 2010. Although the percentages of non-CTE students passing the TAKS reading/ELA test standard increased from 2008 to 2010, the performance of non-CTE students still remained lower than the performance of CTE 2 and CTE 3 students for all three years.

As seen in **Figure 3** (see page 18), a higher percentage of CTE 3 students (84 percent) met the passing standard of the TAKS science test as compared to CTE 2 (74 percent) and non-CTE (63 percent) students in the spring of 2008. During the 2009 administration, CTE 2 students passed at a higher percentage (75 percent), while the same percentages of CTE 3 and non-CTE students (66 percent) met the passing standard of the TAKS science test. For the 2010 TAKS science performance, the percent of

Table 4. CTE 2, CTE 3, and Non-CTE English TAKS Performance, Spring 2008–2010

	Academic Year					
	2008		2009		2010	
	# Tested	% Passing	# Tested	% Passing	# Tested	% Passing
<b>Mathematics</b>						
CTE 2	6,299	71	5,474	73	8,063	81
CTE 3	115	81	931	67	734	83
Non-CTE	21,090	56	21,628	61	23,588	68
<b>Reading/ELA</b>						
CTE 2	8,926	89	7,565	90	8,148	92
CTE 3	113	87	944	85	740	92
Non-CTE	21,559	80	22,165	83	23,937	87
<b>Science</b>						
CTE 2	6,160	74	5,336	75	5,874	83
CTE 3	80	84	805	66	646	85
Non-CTE	10,721	63	11,800	66	13,329	74
<b>Social Studies</b>						
CTE 2	6,137	93	5,324	94	5,843	96
CTE 3	80	96	801	91	643	97
Non-CTE	10,644	88	11,744	90	13,144	93

Note: Data retrieved from TEA TAKS, 2008–2010.

students meeting the science test standard increased for all student groups, with CTE 2 and CTE 3 students outperforming the non-CTE students.

**Figure 4** (see page 18) shows that a larger percentage of CTE 3 students (96 percent) met the passing standard on the social studies test of the TAKS than the CTE 2 (93 percent) and non-CTE students (88 percent) in the spring of 2008. Higher percentages of CTE 2 and CTE 3 students passed the social studies TAKS subtests as compared to non-CTE students during the 2009 administration. For 2009, the passing percentages were 94 percent for CTE 2 students, 91 percent for CTE 3 students, and 90 percent for non-CTE students. For 2010, the passing percentages increased for all students groups on the TAKS social studies test, with CTE 2 students passing at a rate of 96 percent, CTE 3 students at 97 percent, and 93 percent for non-CTE students.

### Performance-Based Monitoring Analysis System

The Texas Education Agency (TEA) has the Performance-Based Monitoring Analysis System (PBMAS) to examine the TAKS performance of students from various populations within special programs, including CTE. **Table 5** (see page 19) shows the PBMAS TAKS performance results and the acceptable performance levels for 2008, 2009, and 2010. The PBMAS has a built-in improvement component such that school programs that have not met acceptable performance levels are given three years to make improvements. Each year, required improvement standards are calculated using the current year's performance rates and the previous year's performance rates. [Details about required improvement calculations can be found at in the PBMAS Manual (TEA, 2009a).]

For the PBMAS, TEA recognized CTE students as those who were in ninth through eleventh grades and coded as CTE 2 (coherent sequence) or CTE 3 (Tech Prep). The TAKS passing rates of CTE 2 and CTE 3 students are combined by category (see Table 5, page 19). For spring 2008 to spring 2010, the TAKS passing rates of CTE students who were classified as economically disadvantaged and those enrolled in Tech Prep surpassed TEA acceptable performance levels on all subject tests.

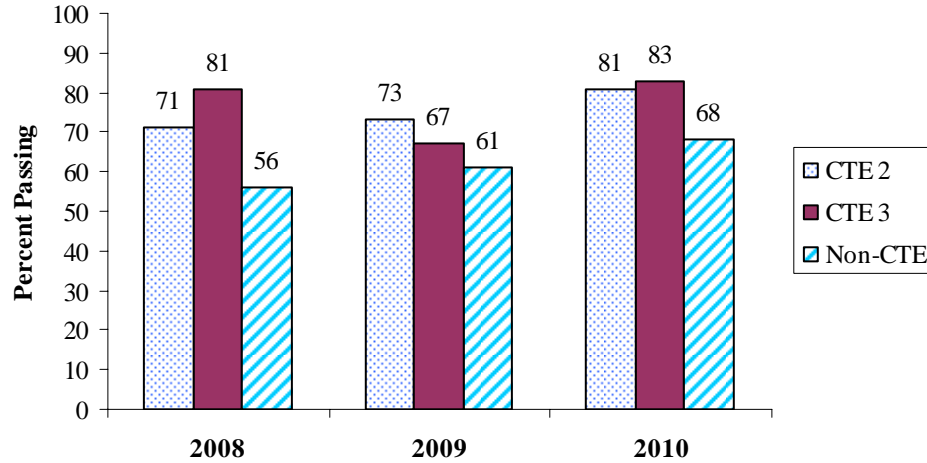


Figure 1. English TAKS math performance for CTE 2 and CTE 3 students compared to non-CTE students, 2008–2010.

Note: Data retrieved from TEA TAKS, 2008–2010.

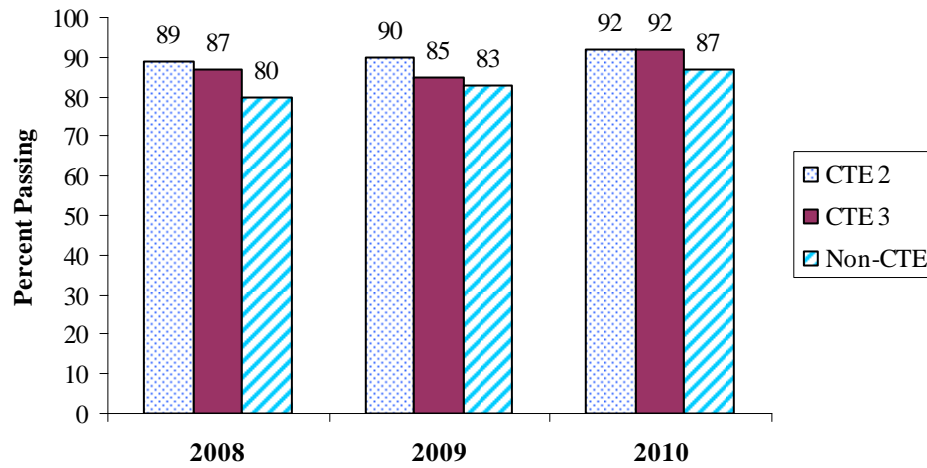
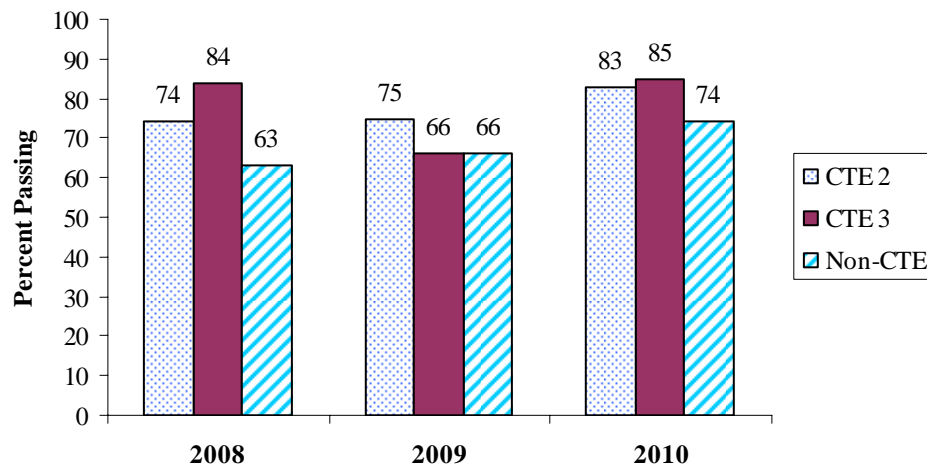


Figure 2. English TAKS reading/English Language Arts performance for CTE 2 and CTE 3 students compared to non-CTE students, 2008–2010.

Note: Data retrieved from TEA TAKS, 2008–2010.



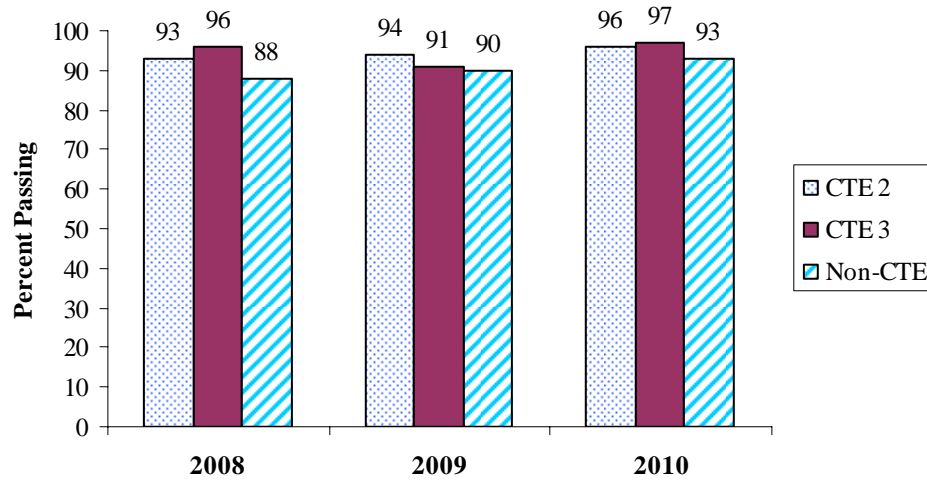
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Figure 3. English TAKS science performance for CTE 2 and CTE 3 students compared to non-CTE students, 2008–2010.

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Note: Data retrieved from TEA TAKS, 2008–2010.

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Figure 4. English TAKS social studies performance for CTE 2 and CTE 3 students compared to non-CTE students, 2008–2010.

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Note: Data retrieved from TEA TAKS, 2008–2010.

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Table 5. CTE TAKS Passing Rates by Economically-Disadvantaged, LEP, Special Education, and Tech Prep Program Participation, Spring 2008–Spring 2009

	Academic Year								
	2008			2009			2010		
	N Tested	% Passing	APL <sup>+</sup>	N Tested	% Passing	APL <sup>+</sup>	N Tested	% Passing	APL <sup>+</sup>
<b>Economically-Disadvantaged</b>									
Mathematics	5,849	69.9	50.0	5,163	70.5	55.0	5,931	79.2	60.0
Reading/ELA	5,951	87.9	70.0	5,218	89.3	70.0	6,071	90.4	70.0
Science	4,065	70.6	45.0	3,786	70.5	50.0	4,420	80.7	55.0
Social Studies	4,060	91.9	65.0	3,780	92.2	70.0	4,389	95.4	70.0
<b>Limited English Proficiency</b>									
Mathematics	354	34.7*	50.0	351	36.5 <sup>2</sup>	55.0	417	53.5*	60.0
Reading/ELA	379	38.3*	70.0	351	37.6 <sup>3</sup>	70.0	411	45.7*	70.0
Science	247	30.0*	45.0	273	30.8 <sup>2</sup>	50.0	318	45.9*	55.0
Social Studies	246	64.6*	65.0	272	62.1 <sup>1</sup>	70.0	305	80.0	70.0
<b>Special Education</b>									
Mathematics	312	30.1 <sup>2</sup>	50.0	228	36.4*	55.0	412	37.1*	60.0
Reading/ELA	337	56.1 <sup>2</sup>	70.0	243	63.4*	70.0	450	57.8*	70.0
Science	282	33.0*	45.0	246	33.3 <sup>2</sup>	50.0	341	41.3*	55.0
Social Studies	280	63.6*	65.0	252	68.7*	70.0	340	79.1	70.0
<b>Tech Prep Program</b>									
Mathematics	120	80.0	50.0	906	69.1	55.0	723	83.3	60.0
Reading/ELA	118	87.3	70.0	918	86.7	70.0	732	92.3	70.0
Science	85	83.5	45.0	803	66.4	50.0	641	85.6	55.0
Social Studies	85	96.5	65.0	799	91.4	70.0	639	97.2	70.0

Source: Performance-Based Monitoring Analysis System, Texas Education Agency, 2008–2009.

Note: Data is reported for students coded CTE 2 or CTE 3 only.

+: Acceptable Performance Level (APL) mandated by Texas Education Agency

\*: Met PBMAS required improvement standard.

1: Passing rate is 0.1 to 10.0 percentage points below the subject-area standard.

2: Passing rate is 10.1 to 20.0 percentage points below the subject-area standard.

3: Passing rate is at least 20.1 percentage points below the subject-area standard.

The performances of students classified as limited English proficiency (LEP) have fluctuated from 2008 to 2010. In the spring of 2008 and 2010, CTE LEP students made the required improvements in passing rates on all TAKS subject tests and were rated as having acceptable performance. However, in the spring of 2009, CTE LEP students did not reach the acceptable performance levels for any of the subject subtests. In the spring of 2008, CTE students receiving special education services met the required improvements standard and were rated acceptable on the science and social studies tests of TAKS. During the same time, these students did not meet the performance standards for mathematics and reading/ELA. In 2009, CTE students receiving special education services met the required improvements and were rated acceptable on the TAKS mathematics, reading/ELA, and social studies tests. However, these students did not meet the 2009 acceptable performance level for science. For 2010, CTE students receiving special education services met the required improvements on the TAKS mathematics, reading/ELA, and science tests and surpassed the performance level on the social studies test.

**What were the graduation and annual dropout rates for students enrolled in the CTE program as compared to HISD students over the past three years, 2006–2007 to 2008–2009?**

*Graduation Rates*

The graduation rates for twelfth-grade students coded as CTE 2 (coherent sequence) and CTE 3 (Tech Prep) from the 2006–2007 to the 2008–2009 school years are presented in **Figure 5**. Students who took CTE courses as general electives and coded as CTE 1 are not included. It is reflected in Figure 5 that the total number of CTE graduates increased over the three-year period, from 3,026 graduates in the spring of 2007 to 3,342 graduates in the spring of 2009. The number of CTE 2 graduates increased slightly from 2,985 in the spring of 2007 to 3,103 in the spring of 2009. The number of CTE 3 graduates increased substantially from 41 graduates in spring 2007 to 239 in the spring of 2009. During the same time period, the number of HISD graduates increased substantially from 7,645 to 8,595.

In **Table 6** (see page 21), graduation rates are displayed by CTE codes and diploma types. 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. From spring 2007 to spring 2009, the largest percentages of CTE graduates each year earn the Recommended diploma distinction, with an average of 84.7 percent. As displayed in Table 6, the number of CTE 2 students with the highest diploma type, Distinguished Achievement, rose from 52 in spring 2007 to 129 in spring 2009.

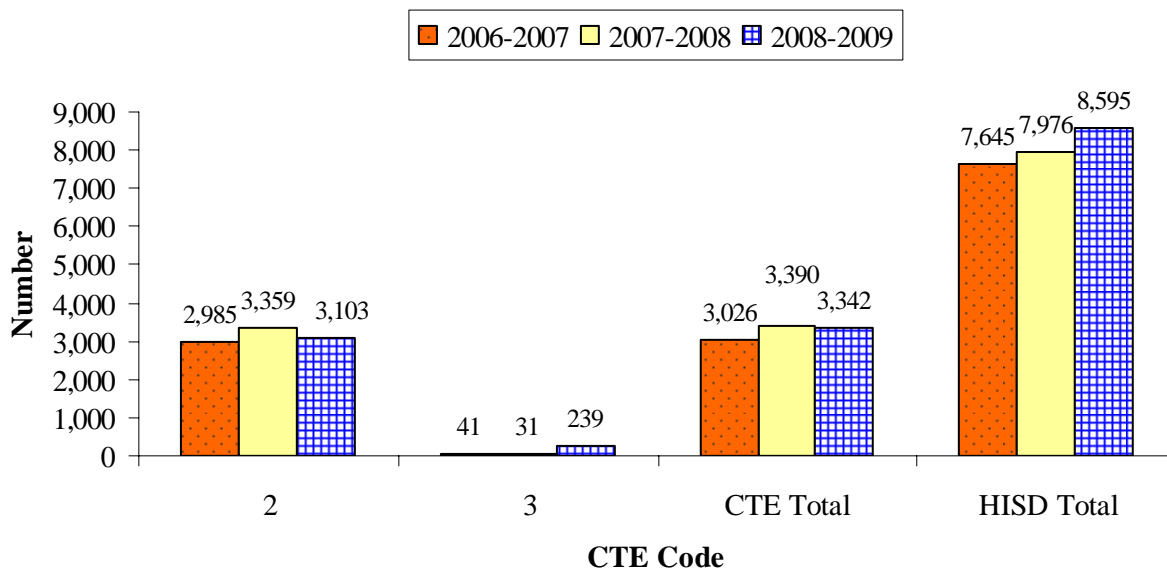


Figure 5. Number of graduates by CTE code, CTE total, and HISD totals 2006–2007 through 2008–2009.

Table 6. CTE Graduation Rates by Diploma Type, 2007–2009

CTE Code	Type of Diploma	2007		2008		2009	
		N	%	N	%	N	%
2	Completion of Individualized Education Plan	162	5.4	119	3.5	95	3.1
	Regular/Minimum Recommended	210	7.0	262	7.8	230	7.4
	Distinguished Achievement	2,561	85.9	2,783	82.9	2,649	85.4
	Total	52	1.7	195	5.8	129	4.2
	Total	2,985	100.0	3,359	100.0	3,103	100.0
3	Completion of Individualized Education Plan	3	7.4	0	0.0	9	3.8
	Regular/Minimum Recommended	1	2.4	1	3.2	24	10.0
	Distinguished Achievement	36	87.8	26	83.8	204	85.4
	Total	1	2.4	4	13.0	2	0.8
	Total	41	100.0	31	100.0	239	100.0

### *Longitudinal Graduation Rates*

The longitudinal graduation rate represents the percentage of students from a class of beginning ninth graders who complete their high school education by their anticipated graduation date (Texas Education Agency, 2009b). **Figure 6** (see page 22) displays the four-year longitudinal graduation rates for CTE (codes 2 and 3 combined) and HISD students for the 2007, 2008, and 2009 graduating classes. The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period increased steadily from 2007 to 2009, starting at 79.4 percent for the class of 2007, to 84.7 percent for the class of 2008, and up to 87.2 percent for the class of 2009. Similarly, the percentage of HISD students from the ninth-grade cohort graduating from high school in a four-year period increased over the three-year period from 64.3 percent for the class of 2007, to 70.0 percent for the class of 2009.

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. Analyzing the four-year longitudinal graduation rate differences between CTE students and HISD students revealed that the percentage-point differences continued to grow from the class of 2007 to the class of 2009. For the class of 2007, the four-year longitudinal graduation rate for CTE students was 79.4 percent, while the rate for HISD students was 64.3, a 15.1 percentage-point difference in favor of CTE students. This difference between CTE students and HISD students continued to increase for the class of 2008 to a percentage-point difference of 16.5 and to 17.2 percentage-point difference for the class of 2009.

### *Annual Dropout Rates*

**Table 7** (see page 22) presents the annual dropout rates (Grades 9 through 12) for CTE and HISD students for the 2006–2007, 2007–2008, and the 2008–2009 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 2006–2007 to 2008–2009, the annual dropout rates of CTE students and HISD steadily decreased. In 2006–2007, the annual dropout rate of the CTE students (codes 2 and 3) was 4.3 percent, went down to 2.0 percent in 2007–2008, and decreased again to 1.5 percent in 2008–2009. The annual dropout rates for HISD students was 7.2 percent (2006–2007), 4.8 percent (2007–2008), and 3.3 percent (2008–2009). For the three school years analyzed, the annual dropout rates for CTE students remained lower than the annual dropout rates for HISD students.



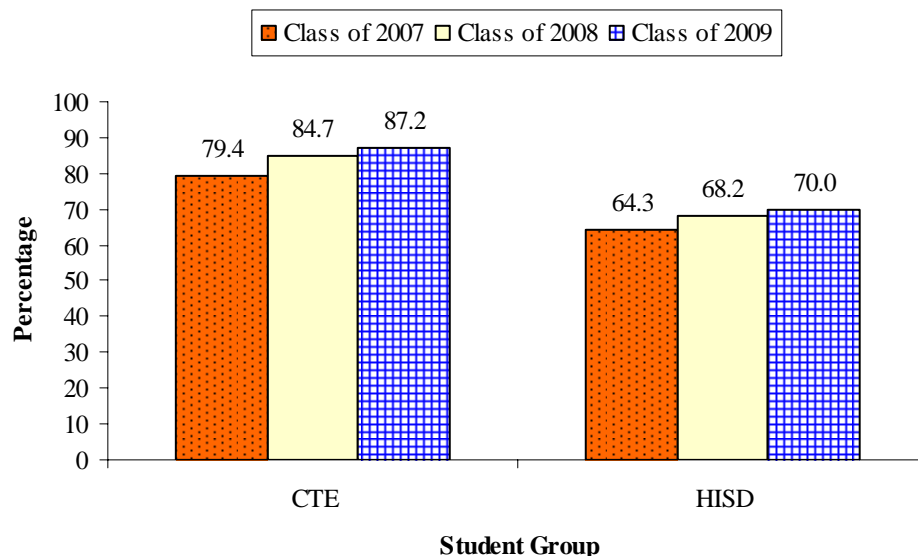


Figure 6. CTE+ and HISD\* Four-Year Longitudinal Graduation Rates Based on Ninth Grade Cohorts, 2007–2009.

+Source: Performance-Based Monitoring Analysis System, Texas Education Agency, 2008–2010.

\*Source: Secondary School Completion and Dropouts in Texas Public Schools Reports, 2008–2010.

Table 7. CTE and HISD Annual Dropout Rates, Grades 9 through 12, 2007–2009

	Academic Year								
	2006–2007			2007–2008			2008–2009		
	Total # of Dropouts	Total # of Students	Dropout Rate (%)	Total # of Dropouts	Total # of Students	Dropout Rate (%)	Total # of Dropouts	Total # of Students	Dropout Rate (%)
CTE+	630	14,714	4.3	274	13,724	2.0	200	13,522	1.5
HISD*	3,787	52,795	7.2	2,478	51,945	4.8	1,702	51,614	3.3

+Source: Performance-Based Monitoring Analysis System, Texas Education Agency, 2008–2010.

\*Source: Secondary School Completion and Dropouts in Texas Public Schools Reports, 2008–2010.

## Discussion

The HISD CTE Department offers career concentration courses and programs 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 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.

In general, CTE students were found to outperform their non-CTE counterparts on TAKS tests, especially those in a coherent sequence of courses. In addition, students enrolled in CTE programs were found to have higher 4-year graduation rates and lower annual dropout rates during the same time period than the district's overall rates. 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. The CTE program must continue to commit to a variety of programming and opportunities for students to develop their career knowledge and skills.

### **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 be made to increase the enrollment of ninth and tenth-grade students in a coherent sequence (CTE 2) of courses and in the Tech Prep program (CTE 3). 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.

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**APPENDIX A**  
**Career Concentrations and Related Courses\*, 2009–2010**

<b>Career Concentration</b>	<b>Sample of Related Courses</b>
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
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/Electronics 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>.

**APPENDIX B**  
**Enrollment in CTE Courses by Secondary Schools with Codes 2 and 3, 2009–2010**

	<b>Total</b>	<b>AG</b>	<b>% AG</b>	<b>AC</b>	<b>% AC</b>	<b>AV</b>	<b>% AV</b>	<b>BS</b>	<b>% BS</b>	<b>ED</b>	<b>% ED</b>
<b>District Totals</b>	17, 827	452	2.5	452	2.5	619	3.5	762	4.3	894	5.0
<b>School Name</b>											
Austin	2,151	201	9.3	134	0.1	0	0.0	0	0.00	58	2.7
Bellaire	933	123	13.2	0	0.0	20	2.1	41	0.04	57	6.1
Carter Career Center	5	0	0.0	0	0.0	0	0.0	0	0.0	1	20.0
Chávez	243	32	13.2	2	0.0	5	2.1	4	0.02	25	10.3
Contemporary Learning Center	43	0	0.0	0	0.0	0	0.0	4	0.09	0	0.0
Davis	430	0	0.0	0	0.0	61	14.2	7	0.02	67	15.6
DeBakey	1,064	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
East Early College	39	0	0.0	0	0.0	0	0.0	38	0.97	1	2.6
Eastwood Academy	238	0	0.0	0	0.0	0	0.0	0	0.0	44	18.5
Furr	35	0	0.0	5	0.1	0	0.0	0	0.0	0	0.0
Harper Alternative	17	2	11.8	4	0.2	0	0.0	0	0.0	0	0.0
Jones	25	0	0.0	0	0.0	4	16.0	1	0.04	14	56.0
Jordan	1,463	0	0.0	0	0.0	130	8.9	63	0.04	123	8.4
Kashmere	145	0	0.0	6	0.0	0	0.0	0	0.0	11	7.6
Lamar	1,033	70	6.8	53	0.1	55	5.3	218	0.21	6	0.6
Law E/CJ	1,026	0	0.0	0	0.0	0	0.0	83	0.08	14	1.4
Lee	116	0	0.0	12	0.1	5	4.3	3	0.03	11	9.5
Madison	755	17	2.3	0	0.0	0	0.0	28	0.04	99	13.1
Milby	584	0	0.0	0	0.0	31	5.3	1	0.00	4	0.7
Ninth Grade College Prep Academy	80	0	0.0	5	0.1	0	0.0	0	0.0	0	0.0
REACH	20	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0
Reagan	386	0	0.0	2	0.01	0	0	2	0.01	23	6.0
Sam Houston Math, Science & Tech. Center	304	0	0.0	36	0.12	0	0.0	1	0.00	4	1.3
Scarborough	348	0	0.0	65	0.19	25	7.2	0	0.00	0	0.00
Sharpstown	134	0	0.0	0	0.00	0	0.00	27	0.20	16	11.9
Sterling	253	0	0.0	14	0.06	0	0.00	13	0.05	14	5.5
Waltrip	2,296	0	0.0	28	0.01	149	6.5	22	0.01	124	5.4
Washington	389	0	0.0	0	0.0	73	18.8	0	0.0	67	17.2
Westbury	1,338	0	0.0	33	0.02	0	0.0	151	0.11	14	1.0
Westside	1,073	0	0.0	0	0.00	11	1.0	37	0.03	0	0.00
Wheatley	489	0	0.0	0	0.0	0	0.0	0	0.0	48	9.8
Worthing	277	7	2.5	51	0.18	14	5.1	6	0.02	29	10.5
Yates	95	0	0.0	0	0.00	36	37.9	12	0.13	20	21.1

AG= Agriculture; AC= Architecture/Construction; AV= Arts, A/V Technology and Communications, BS= Business, Management and Administration; ED= Education and Training

**APPENDIX B (continued)**  
**Enrollment in CTE Courses by Secondary Schools with Codes 2 and 3, 2009–2010**

	Total	FN	% FN	HS	% HS	HT	% HT	HU	% HU	IT	% IT
<b>District Totals</b>	17, 827	595	3.3	2,283	12.8	361	2	1,144	6.4	5,989	33.6
<b>School Name</b>											
Austin	2,151	214	9.9	22	1.0	2	0.1	74	3.4	919	42.7
Bellaire	933	13	1.4	26	2.8	0	0.0	148	15.9	409	43.8
Carter Career Center	5	0	0.0	0	0.0	0	0.0	0	0.0	2	40.0
Chávez	243	11	4.5	39	16.0	7	2.9	2	0.8	73	30.0
Contemporary Learning Center	43	3	7.0	2	4.7	0	0.0	1	2.3	31	72.1
Davis	430	1	0.2	16	3.7	92	21.4	35	8.1	81	18.8
DeBakey	1,064	0	0.0	894	84.0	0	0.0	0	0.0	170	16.0
East Early College	39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Eastwood Academy	238	9	3.8	0	0.0	0	0.0	1	0.4	117	49.2
Furr	35	0	0.0	7	20.0	0	0.0	6	17.1	15	42.9
Harper Alternative	17	0	0.0	0	0.0	4	23.5	0	0.0	5	29.4
Jones	25	0	0.0	0	0.0	0	0.0	0	0.0	5	20.0
Jordan	1,463	31	2.1	81	5.5	51	3.5	206	14.1	442	30.2
Kashmere	145	0	0.0	0	0.0	0	0.0	26	17.9	82	56.6
Lamar	1,033	114	11.0	64	6.2	82	7.9	55	5.3	153	14.8
Law E/CJ	1,026	47	4.6	54	5.3	0	0.0	0	0.0	352	34.3
Lee	116	9	7.8	12	10.3	0	0.0	2	1.7	35	30.2
Madison	755	7	0.9	9	1.2	0	0.0	95	12.6	225	29.8
Milby	584	1	0.2	113	19.3	0	0.0	64	11.0	219	37.5
Ninth Grade College Prep Academy	80	0	0.0	0	0.0	0	0.0	0	0.0	19	23.8
REACH	20	0	0.0	5	25.0	0	0.0	4	20.0	9	45.0
Reagan	386	29	7.5	111	28.8	0	0.0	0	0.0	126	32.6
Sam Houston Math, Science & Tech. Center	304	0	0.0	0	0.0	0	0.0	28	9.2	112	36.8
Scarborough	348	16	4.6	0	0.0	0	0.0	0	0.0	199	57.2
Sharpstown	134	10	7.5	5	3.7	0	0.0	0	0.0	76	56.7
Sterling	253	0	0.0	0	0.0	0	0.0	51	20.2	41	16.2
Waltrip	2,296	0	0.0	221	9.6	0	0.0	162	7.1	821	35.8
Washington	389	16	4.1	46	11.8	0	0.0	57	14.7	130	33.4
Westbury	1,338	28	2.1	210	15.7	0	0.0	66	4.9	436	32.6
Westside	1,073	14	1.3	312	29.1	87	8.1	0	0.0	401	37.4
Wheatley	489	0	0.0	34	7.0	36	7.4	0	0.0	193	39.5
Worthing	277	13	4.7	0	0.0	0	0.0	58	20.9	79	28.5
Yates	95	9	9.5	0	0.0	0	0.0	3	3.2	12	12.6

FN= Finance; HS= Health Science; HT= Hospitality and Tourism; HU= Human Services; IT= Information Technology.

**APPENDIX B (cont.)**  
**Enrollment in CTE Courses by Secondary Schools with Codes 2 and 3, 2009–2010**

	Total	LW	% LW	MN	% MN	MK	% MK	SC	% SC	TD	% TD
<b>District Totals</b>	17, 827	693	3.9	531	3.0	1,148	6.4	958	5.4	826	4.6
<b>School Name</b>											
Austin	2,151	0	0.0	0	0.0	292	13.6	155	7.2	80	3.7
Bellaire	933	0	0.0	0	0.0	33	3.5	0	0.0	63	6.8
Carter Career Center	5	0	0.0	0	0.0	2	40.0	0	0.0	0	0.0
Chávez	243	4	1.6	3	1.2	0	0.0	36	14.8	0	0.0
Contemporary Learning Center	43	0	0.0	1	2.3	1	2.3	0	0.0	0	0.0
Davis	430	0	0.0	0	0.0	26	6.0	3	0.7	41	9.5
DeBakey	1,064	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
East Early College	39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Eastwood Academy	238	0	0.0	0	0.0	0	0.0	67	28.2	0	0.0
Furr	35	0	0.0	0	0.0	0	0.0	2	5.7	0	0.0
Harper Alternative	17	0	0.0	0	0.0	0	0.0	0	0.0	2	11.8
Jones	25	0	0.0	0	0.0	1	4.0	0	0.0	0	0.0
Jordan	1,463	0	0.0	48	3.3	110	7.5	86	5.9	92	6.3
Kashmere	145	0	0.0	0	0.0	0	0.0	0	0.0	20	13.8
Lamar	1,033	0	0.0	47	4.5	97	9.4	19	1.8	0	0.0
Law E/CJ	1,026	476	46.4	0	0.0	0	0.0	0	0.0	0	0.0
Lee	116	14	12.1	8	6.9	0	0.0	5	4.3	0	0.0
Madison	755	0	0.0	30	4.0	159	21.1	38	5.0	48	6.4
Milby	584	0	0.0	107	18.3	19	3.3	25	4.3	0	0.0
Ninth Grade College Prep Academy	80	0	0.0	0	0.0	0	0.0	1	1.3	0	0.0
REACH	20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Reagan	386	0	0.0	0	0.0	34	8.8	9	2.3	50	13.0
Sam Houston Math, Science & Tech. Center	304	0	0.0	0	0.0	0	0.0	2	0.7	56	18.4
Scarborough	348	0	0.0	29	8.3	0	0.0	14	4.0	0	0.0
Sharpstown	134	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sterling	253	0	0.0	11	4.3	27	10.7	15	5.9	67	26.5
Waltrip	2,296	199	8.7	56	2.4	273	11.9	170	7.4	71	3.1
Washington	389	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Westbury	1,338	0	0.0	80	6.0	38	2.8	116	8.7	166	12.4
Westside	1,073	0	0.0	111	10.3	0	0.0	100	9.3	0	0.0
Wheatley	489	0	0.0	0	0.0	33	6.7	75	15.3	70	14.3
Worthing	277	0	0.0	0	0.0	0	0.0	20	7.2	0	0.0
Yates	95	0	0.0	0	0.0	3	3.2	0	0.0	0	0.0

LW= Law, Public Safety, Corrections, and Security; MN= Manufacturing; MK= Marketing, Sales, and Service; SC= Science, Technology, Engineering, and Mathematics; TD= Transportation, Distribution and Logistics.