

MEMORANDUM

February 17, 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 2008–2009 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, 2006–2009, 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 2008–2009.

For spring 2009, 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. Non-CTE students outperformed CTE 3 students in reading/English language arts, science, and social studies by as much as 6 percentage points, unlike 2008 performance where CTE 3 students outperformed non-CTE students in all TAKS subject tests.

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 2006 (79.9 percent versus 67.1 percent), in the class of 2007 (79.4 percent versus 64.3 percent), and in the class of 2008 (84.7 percent versus 68.2 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
Regional Superintendents
Tracy Weeden
Rosena Garcia
Steve Allen

RESEARCH

Educational Program Report

HOUSTON
Independent School District



Creating a College-Bound Culture

Career and Technical Education 2008–2009

**Department of Research and Accountability
Houston Independent School District**



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EXECUTIVE SUMMARY

CAREER AND TECHNICAL EDUCATION 2008– 2009

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, and graduation rates were presented for students enrolled in CTE courses over the last three school years, (2006–2007 through 2008–2009). Success highlights of CTE students during the 2008–2009 school year will also be included.

Key Findings

1. What were the demographic characteristics of students enrolled in the CTE program over the past three years, 2006–2009?
 - Over the past three years, HISD student enrollment in grades six through twelve has steadily declined from 89,663 students in 2006–2007 to 86,194 students in 2008–2009, a decrease of 3.4 percent. The CTE program experienced a reduction in enrollment of 9.1 percent, from 37,658 students in 2006–2007 to 34,240 students in 2008–2009.
 - The number of students enrolled in CTE 1 courses, as elective-takers, decreased from 22,534 in 2006–2007 to 21,071 in 2008–2009, which was a 6.5 percent decline. During the same time period, the enrollment numbers of CTE 2 students declined by 21.0 percent. However, the number of CTE students coded in the Tech Prep program (code = 3) increased from 79 students in 2006–2007 to 1,289 students in 2008–2009.
2. What were the CTE program components and course offerings implemented in HISD in 2008–2009?
 - CTE program components include course offerings, certifications/licenses, career and technical student organizations, college credit for CTE students, career preparation, internships, job shadowing, the CTE Expo and Tech Prep.

- The HISD CTE program has developed several relationships with local and national professional organizations. Students are encouraged to join career and technical student organizations (CTSO) to learn about their career interests from professionals within the industry. By participating in CTSOs, students are also able to demonstrate their mastery, skills, and knowledge through competitions with other students from other districts, regions, and states. These learning experiences further expose students to options within their selected career pathways and expand their communication and leadership skills.
- 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 provides 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 2008–2009 were (1) Information Technology, (2) Health Science, (3) Human Services, (4) Marketing, Sales, and Services, and (5) Manufacturing.

3. What were the certifications/licenses earned by students enrolled in the CTE program in 2008–2009?

A total of 1,301 certifications or licenses were earned by CTE students in 21 different specialization areas. The largest number of certifications was earned in the area of Cardiopulmonary Resuscitation (CPR), with 485 students earning this training 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, 2006–2009?

- From the 2007 spring administration of the TAKS to the 2009 spring administration, the percent of CTE 2 and CTE 3 students passing the math subtest of the TAKS was higher than the percent passing of non-CTE students. Specifically, in 2009, the percentage of CTE 2 students (73 percent) passing the math subtest was 8 percentage points higher than the rate of passing non-CTE students (65 percent), while the percentage of CTE 3 students (67 percent) was 2 percentage points higher than the non-CTE students. Similar, although more dramatic, results were found in 2007 and 2008.
- For spring 2009, CTE 2 students outperformed CTE 3 and non-CTE students on all subject areas of the TAKS. Non-CTE students outperformed CTE 3 students in reading/English language arts, science, and social studies by as much as 6 percentage points, unlike 2008 performance where CTE 3 students outperformed non-CTE students in all TAKS subject tests.
- For spring 2008 and 2009, 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 subtests.

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, 2005–2008?

- The number of CTE graduates increased over the three-year period, from 2,585 graduates in the spring of 2006 to 3,390 graduates in the spring of 2008. During the same time, the number of HISD graduates rose slightly from 7,853 to 7,976. There has also been a 31.3 percent increase in the number

of CTE 2 graduates from spring 2006 (2,558) to spring 2008 (3,359). The number of CTE 3 graduates fluctuated from 27 in spring 2006, to 41 in spring 2007, and to 31 in spring 2008.

- The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period remained relatively steady from the class of 2006 to the class of 2007 (79.9 percent to 79.4 percent). However, for the class of 2008, the percentage of CTE students from the ninth-grade cohort graduating from high school in a four-year period increased from the previous year by 5.3 percentage points to 84.7 percent. The percentages of CTE students graduating from high school in the four-year period were higher than those of the district in the class of 2006 (79.9 percent versus 67.1 percent), in the class of 2007 (79.4 percent versus 64.3 percent), and in the class of 2008 (84.7 percent versus 68.2 percent).
- From 2005–2006 to 2007–2008, the fluctuations in the CTE annual dropout rates for grades 9 through 12 mirrored those of the district. In 2005–2006, the annual dropout rate of the CTE students (codes 2 and 3) was 3.6 percent. The dropout rate for these students rose to 4.3 percent in 2006–2007 and decreased to 2.0 percent in 2007–2008. The annual dropout rates for HISD students was 6.5 percent (2005–2006), 7.2 percent (2006–2007), and 4.8 percent (2007–2008). From 2005–2006 to 2007–2008, the annual dropout rates for CTE students remained lower than the annual dropout rates for HISD students, with an average difference of 2.9 percentage points.

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. Given the success of the CTE EXPO, program personnel should continue to expand this program component. In addition to providing a platform for CTE students to display their work from their career-related courses, the EXPO serves as an advertisement of the program offerings within the CTE program. To greater promote the CTE program, parents and students from all elementary and middle schools should be invited to the CTE EXPO to expose younger students to CTE courses earlier in their academic endeavors. CTE administrators should consider holding the EXPO on at least one school day so that district teachers could bring students for an out-of-classroom learning experience.
3. 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 2008– 2009

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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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, (2006–2007 through 2008–2009).

The following evaluation questions were addressed:

1. What were the demographic characteristics of students enrolled in the CTE program over the past three years, 2006–2009?
2. What were the CTE program components and course offerings implemented in HISD in 2008–2009?
3. What were the certifications/licenses earned by students enrolled in the CTE program in 2008–2009?
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, 2006–2009?
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, 2005–2008?

Program Personnel

Currently, the CTE program utilizes HISD central office administrative staff to support instructional services in line with the career clusters of AchieveTexas (four content area specialists, each supporting four career clusters). The staff includes a technical writer and a project manager. Additionally, there is a

director, a curriculum manager, a data quality manager, and a manager of Career Clusters and Workforce Development. Four hundred and four instructors teach CTE courses in HISD and fifteen counselors help students with job placements. A part-time recruiter helps to find and retain CTE teachers. Four administrative support staff members assist in fulfilling the clerical responsibilities necessary to operate the program.

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, and the Career and Technical Education website (HISD, 2008) provided details about the program and curriculum.

Quantitative analysis was accomplished using results obtained 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 11th 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, 2006–2009?

The HISD enrollment numbers and CTE student enrollment by codes are shown in **Table 1**. These codes are based on the number of students eligible to participate in the CTE program, which are those students in grades six through twelve. Over the past three years, HISD student enrollment in grades six through twelve has steadily declined from 89,663 students in 2006–2007 to 86,194 students in 2008–2009, a decrease of 3.4 percent. The CTE program experienced a reduction in enrollment of 9.1 percent, from 37,658 students in 2006–2007 to 34,240 students in 2008–2009.

The number of students enrolled in CTE 1 courses as elective-takers decreased from 22,534 in 2006–2007 to 21,071 in 2008–2009, which was a 6.5 percent decline. During the same time period, the numbers of CTE 2 students declined, starting at 15,045 in 2006–2007 to 11,880 in 2008–2009. For the CTE 2 student enrollment, there was an overall decrease of 21.0 percent from 2006–2007 to 2008–2009. However, the number of CTE students coded in the Tech Prep program (code = 3) increased from 79 students in 2006–2007 to 1,289 students in 2008–2009.

Table 2 (see page 9) presents the district and CTE enrollment of students by subgroups. According to Table 2, the percentage of at-risk students within the district has decreased from 2006–2007 to 2008–2009 (65.2 percent to 62.5 percent). The percentage of at-risk students enrolled in CTE courses also decreased during this three-year period (70.5 percent to 66.3 percent). A similar trend was found among special education students. From 2006–2009, the district's percentage of special education students decreased from 12.7 percent to 11.6 percent; while the percentage of students enrolled in CTE courses who received special education services decreased from 11.7 percent to 10.7 percent. The percentage of students identified as LEP districtwide increased over the three school years, starting at 11.4 percent in 2006–2007 and increasing to 14.7 percent in 2007–2008. During the three-year period, the percentage of students identified as LEP within CTE courses increased by one percentage point (9.2 percent to 10.2 percent). The district enrollment of students identified as gifted and talented remained relatively the same from 2006–2007 to 2008–2009 (14.6 percent to 14.3 percent). The percentage of students enrolled in CTE courses identified as gifted and talented decreased from 12.4 percent in 2006–2007 to 11.0 percent in 2008–2009.

Table 1. Student Enrollment and Student by CTE Codes, 2006–2007 through 2008–2009

	2006–2007	2007–2008	2008–2009
Total HISD Student Enrollment (6th-12th)	89,663	86,987	86,194
Number of CTE Students Coded 1	22,534	21,618	21,071
Number of CTE Students Coded 2	15,045	13,864	11,880
Number of CTE Students Coded 3	79	156	1,289
Total Number of CTE Students	37,658	35,638	34,240

Note: Data retrieved from TEA PEIMS, Oct. 2006 – Oct. 2008.

Table 2. District and CTE Course Enrollment by Subgroups*, 2006–2007 Through 2008–2009

Subgroup	Academic Year					
	2006–2007		2007–2008		2008–2009	
	N	%	N	%	N	%
Total HISD Student Enrollment (6th-12th)	89,663	100.0	86,987	100.0	86,194	100.0
Gender						
Female	44,408	49.5	42,992	49.4	42,430	49.2
Male	45,255	50.5	43,995	50.6	43,764	50.8
Ethnicity						
American Indian	73	<1.0	66	<1.0	54	<1.0
Asian	3,109	3.5	3,059	3.5	3,098	3.6
African-American	28,281	31.5	26,681	30.7	25,895	30.0
Hispanic	49,569	55.3	49,085	56.4	49,436	57.4
White	8,631	9.6	8,096	9.3	7,711	8.9
Economically-Disadvantaged	63,039	70.3	62,598	72.0	65,369	75.8
At-Risk	58,478	65.2	52,225	60.0	53,912	62.5
Special Education	11,412	12.7	10,499	12.1	10,025	11.6
Limited English Proficiency	10,245	11.4	11,923	13.7	12,693	14.7
Gifted & Talented (G/T)	13,123	14.6	12,383	14.2	12,290	14.3
Total CTE Student Enrollment	37,658	100.0	35,638	100.0	34,240	100.0
Gender						
Female	18,775	49.9	17,751	49.8	16,797	49.1
Male	18,883	50.1	17,887	50.2	17,443	50.9
Ethnicity						
American Indian	27	<1.0	25	<1.0	15	<1.0
Asian	1,027	2.7	1,084	3.0	1,030	3.0
African-American	13,063	34.7	12,157	34.1	11,490	33.5
Hispanic	21,009	55.8	19,836	55.7	19,302	56.4
White	2,532	6.7	2,536	7.1	2,403	7.0
Economically-Disadvantaged	26,271	69.8	25,619	71.9	26,201	76.5
At-Risk	26,540	70.5	22,706	63.7	22,701	66.3
Special Education	4,393	11.7	3,799	10.7	3,665	10.7
Limited English Proficiency	3,475	9.2	3,506	9.8	3,494	10.2
Gifted & Talented (G/T)	4,661	12.4	4,121	11.6	3,753	11.0

Note: Data retrieved from TEA PEIMS, October 2006 – October 2008.

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

What were the CTE course components and program offerings implemented in HISD in 2008–2009?

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

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.

Career & 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).

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.

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 2008–2009 school year. Several students attending the High School for Law Enforcement and Criminal Justice had job shadowing experiences at the Houston Emergency Center.

CTE Expo

During the 2008–2009 school year, the CTE department held the second annual CTE Expo to showcase the skills, knowledge and products students produced within their CTE courses. The CTE EXPO was held on February 14, 2009 at the Hattie Mae White Education Center. The EXPO included health and science exhibits, auto technology hands-on demonstrations, a fashion show, a robotics obstacle course, computer maintenance competitions, livestock judging, and an agriculture auction. This event was open to students, parents, and industry partners. The event was a way to highlight students and market the CTE program to community members.

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.

Program 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 2008–2009 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 2008–2009 were (1) Information Technology, (2) Health Science, (3) Human Services, (4) Marketing, Sales, and Services, and (5) Manufacturing. 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. Yates' communication students participated in the 2008 Houston International

Festival honoring Africa. Students created a large mural that served as a backdrop for the center performance stage at City Hall.

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 2008, the PLTW program at Chávez was accepted into the National Engineering Academy Network, making the HISD school one of only 21 in the country designated as a “National Engineering Academy.” (Full story can be found at www.houstonisd.org, dated April 23, 2008.)

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 2008–2009?

Table 3 (see page 15) presents the certifications/licenses earned by CTE students in the 2008–2009 school year. A total of 1,301 certifications and/or licenses were earned in 21 different specialization areas. The largest number of certifications was earned in the area of Cardiopulmonary Resuscitation (CPR), with 485 students earning this training certification. Three hundred students earned their safety certification from the Occupational Safety and Health Administration (OSHA) and 273 students were certified as Microsoft Office Specialist (MOS).

Table 3. Certifications/Licenses Earned by CTE Students, 2008–2009

	2008–2009	
	N	%
Adobe Certified Associates	7	0.5
American Heart Association - CPR	65	5.0
American Red Cross - Cardiopulmonary Resuscitation (CPR)	420	32.3
Autocad	8	0.6
Autodesk Inventor	8	0.6
Certified Nurse Assistant	4	0.3
Comp TIA A+ (Computer Technician)	23	1.8
Cosmetology	2	0.2
Department of Public Safety Certifications in National Crime Information Center (NCIC) and the Texas Crime Information Center (TCIC) Databases	12	0.9
Electrician Apprentice	2	0.2
Microsoft Office Specialist (MOS)	273	21.0
National Academy of Emergency Dispatch (NAED) Certified Emergency Telecommunicator	24	1.8
National Center for Construction Education and Research (NCCER) –Heavy Equipment	25	1.9
National Professional Certification in Customer Service	11	0.8
Network+	2	0.2
Occupational Safety and Health Administration (OSHA) Safety Certified	300	23.1
Pet CPR	14	1.1
Pharmacy Technician	1	0.1
ServSafe Food Safety Certification	31	2.4
Texas Commission on Law Enforcement Officer Standards and Education (TCLEOSE) - Emergency Communication	32	2.5
TCLEOSE - VESTA Map Star	32	2.5
Texas Plumber's Apprentice License	5	0.4
Total Number of Certifications/Licenses Earned	1,301	100.0

Source: Department of Career and Technical Education, 2009.

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, 2006–2007 to 2008–2009?

Table 4 (see page 16) and **Figures 1** through **4** (see pp.17-18) display the 2007 through 2009 student performance on the English TAKS by subtest for the following student groups: CTE 2 (coherent sequence), CTE 3 (Tech Prep), and non-CTE students. **Figure 1** (see page 17) shows that the percent of CTE 2 and CTE 3 students passing the math subtest of the TAKS was higher than the percent passing of non-CTE students from 2007 to 2009. **Figure 2** (see page 17) shows that the percentage of CTE 2 students passing the TAKS reading/English language arts (ELA) subtest was higher than non-CTE students from 2007 to 2009, with an average percentage-point difference of 4.3. For the spring of 2008, CTE 3 students had a larger percentage of students passing the TAKS reading/ ELA subtest as compared to non-CTE students. However, for spring 2007 and spring 2009, the percentage of CTE 3 students passing the reading/ ELA subtest of the TAKS was below the performance of CTE 2 students and non-CTE students.

As seen in **Figure 3** (see page 18), a larger percentage of non-CTE students (67 percent) passed the TAKS science subtest as compared to CTE 2 (60 percent) and CTE 3 (63 percent) students in the spring of 2007. The opposite was the case during the 2008 administration, with CTE 2 and CTE 3 students

Table 4. CTE 2, CTE 3, and Non-CTE English TAKS Performance, Spring 2007–2009

	Academic Year					
	2007		2008		2009	
	# Tested	% Passing	# Tested	% Passing	# Tested	% Passing
Mathematics						
CTE 2	6,247	65	6,299	71	5,474	73
CTE 3	32	78	115	81	931	67
Non-CTE	10,546	62	10,860	61	11,277	65
Reading/ELA						
CTE 2	9,754	83	8,926	89	7,565	90
CTE 3	31	74	113	87	944	85
Non-CTE	10,718	81	11,108	82	11,513	86
Science						
CTE 2	6,933	60	6,160	74	5,336	75
CTE 3	32	63	80	84	805	66
Non-CTE	5,188	67	5,154	71	5,847	72
Social Studies						
CTE 2	6,896	87	6,137	93	5,324	94
CTE 3	32	84	80	96	801	91
Non-CTE	5,131	89	5,100	90	5,803	92

Note: Data retrieved from TEA TAKS, 2007–2009.

passing at higher rates (74 and 84 percent, respectively) than non-CTE students (71 percent). For the 2009 TAKS performance, the percent of CTE 2 students (75 percent) passing the science subtest remained higher than the non-CTE students (72 percent), while the percent of CTE 3 students passing decreased to 66 percent.

Figure 4 (see page 18) shows that a larger percentage of non-CTE students (89 percent) passed the social studies subtest of the TAKS than the CTE 2 (87 percent) and CTE 3 students (84 percent) in the spring of 2007. Conversely, higher percentages of CTE 2 and CTE 3 students passed the social studies TAKS subtests as compared to non-CTE students during the 2008 administration. For 2008, the passing percentages were 93 percent for CTE 2 students, 96 percent for CTE 3 students, and 90 percent for non-CTE students. For 2009, the passing percentages were 94 percent for CTE 2 students was 94 percent, 91 percent for CTE 3 students, and 92 percent for non-CTE students, with CTE 2 passing at a higher rate than CTE 3 and 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 and 2009. 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).]

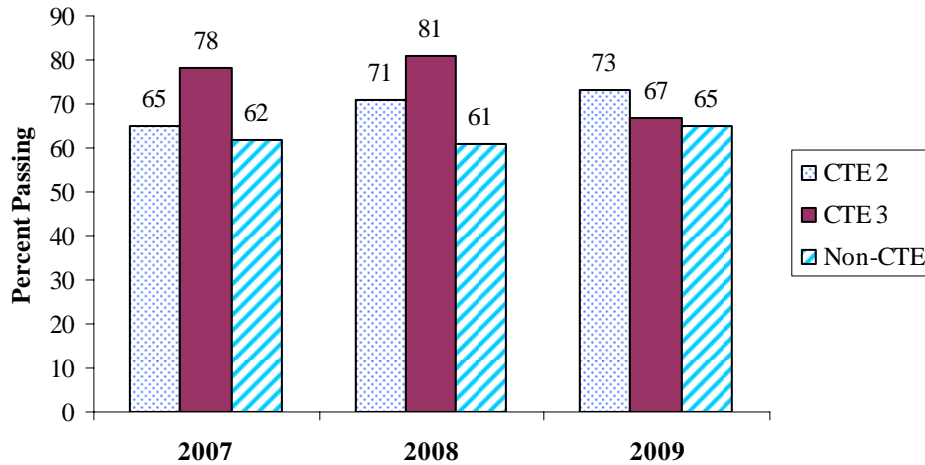


Figure 1. English TAKS math performance for CTE 2 and CTE 3 students compared to non-CTE students, 2007–2009.

Note: Data retrieved from TEA TAKS, 2007–2009.

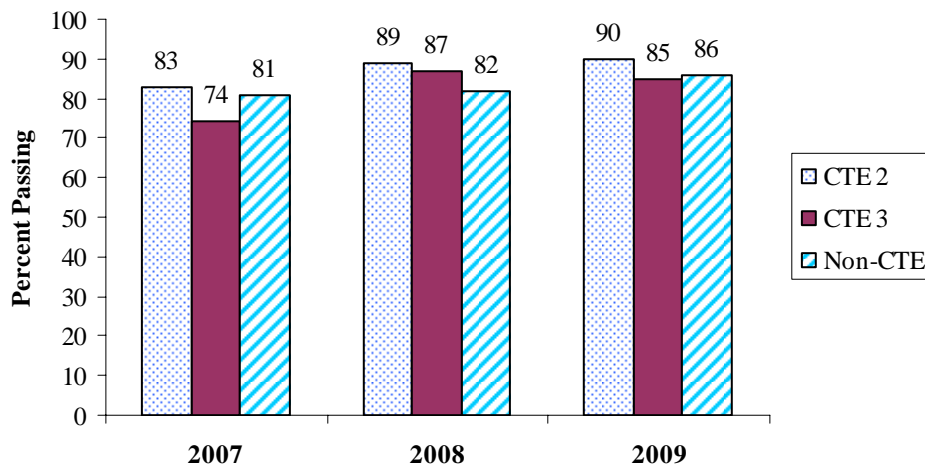


Figure 2. English TAKS reading/English Language Arts performance for CTE 2 and CTE 3 students compared to non-CTE students, 2007–2009.

Note: Data retrieved from TEA TAKS, 2007–2009.

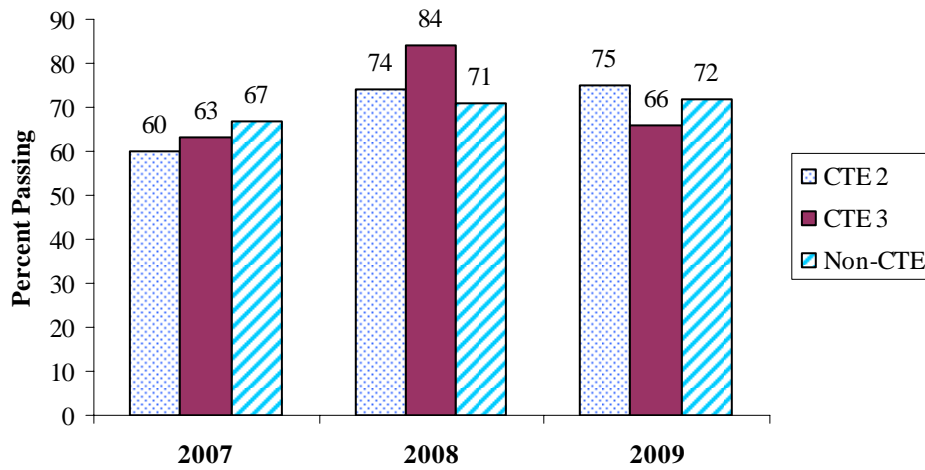


Figure 3. English TAKS science performance for CTE 2 and CTE 3 students compared to non-CTE students, 2007–2009.

Note: Data retrieved from TEA TAKS, 2007– 2009.

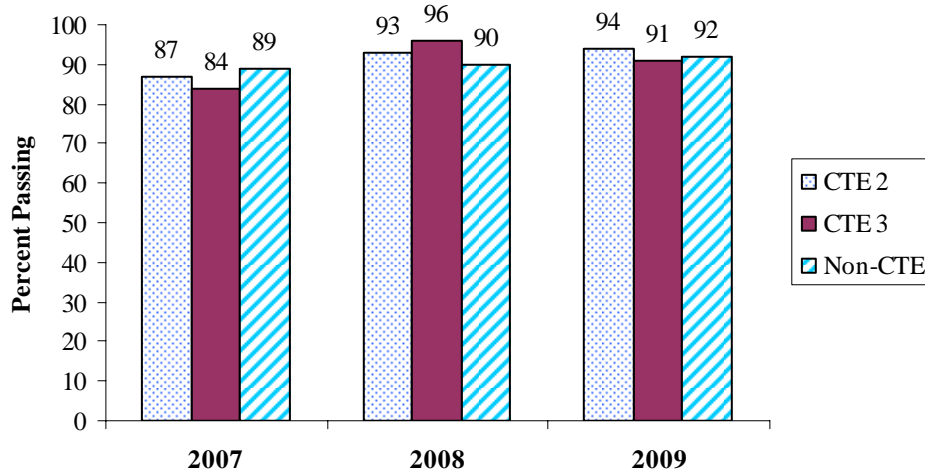


Figure 4. English TAKS social studies performance for CTE 2 and CTE 3 students compared to non-CTE students, 2007–2009.

Note: Data retrieved from TEA TAKS, 2007– 2009.

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		
	N Tested	% Passing	Acceptable Performance Level (% Passing)	N Tested	% Passing	Acceptable Performance Level (% Passing)
Economically-Disadvantaged						
Mathematics	5,849	69.9	50.0	5,163	70.5	55.0
Reading/ELA	5,951	87.9	70.0	5,218	89.3	70.0
Science	4,065	70.6	45.0	3,786	70.5	50.0
Social Studies	4,060	91.9	65.0	3,780	92.2	70.0
Limited English Proficiency						
Mathematics	354	34.7*	50.0	351	36.5 ²	55.0
Reading/ELA	379	38.3*	70.0	351	37.6 ³	70.0
Science	247	30.0*	45.0	273	30.8 ²	50.0
Social Studies	246	64.6*	65.0	272	62.1 ¹	70.0
Special Education						
Mathematics	312	30.1 ²	50.0	228	36.4*	55.0
Reading/ELA	337	56.1 ²	70.0	243	63.4*	70.0
Science	282	33.0*	45.0	246	33.3 ²	50.0
Social Studies	280	63.6*	65.0	252	68.7*	70.0
Tech Prep Program						
Mathematics	120	80.0	50.0	906	69.1	55.0
Reading/ELA	118	87.3	70.0	918	86.7	70.0
Science	85	83.5	45.0	803	66.4	50.0
Social Studies	85	96.5	65.0	799	91.4	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.

*: 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.

For the PBMAS, TEA recognized CTE students as those who were in ninth through eleventh grade 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). For spring 2008 and 2009, 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 subtests.

In the spring of 2008, students classified as limited English proficiency (LEP) made the required improvements in passing rates on all TAKS subtests 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 subtests of TAKS. During the same time period, these students did not meet the performance standard 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 subtests. However, these students did not meet the 2009 acceptable performance standard for science.

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, 2005–2008?

Graduation Rates

The graduation rates for twelfth-grade students coded as CTE 2 (coherent sequence) and CTE 3 (Tech Prep) from the 2005–2006 to the 2007–2008 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 2,585 graduates in the spring of 2006 to 3,390 graduates in the spring of 2008. During the same time period, the number of HISD graduates rose slightly from 7,853 to 7,976. There has also been a 31.3 percent increase in the number of CTE 2 graduates from spring 2006 (2,558) to spring 2008 (3,359). The number of CTE 3 graduates fluctuated from 27 in spring 2006, to 41 in spring 2007, and to 31 in spring 2008.

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 2006 to spring 2008, the largest percentages of CTE graduates each year earn the Recommended diploma distinction, with an average of 84 percent. As displayed in Table 6, the number of CTE 2 students with the highest diploma type, Distinguished Achievement, rose from 22 in spring 2006 to 195 in spring 2008.

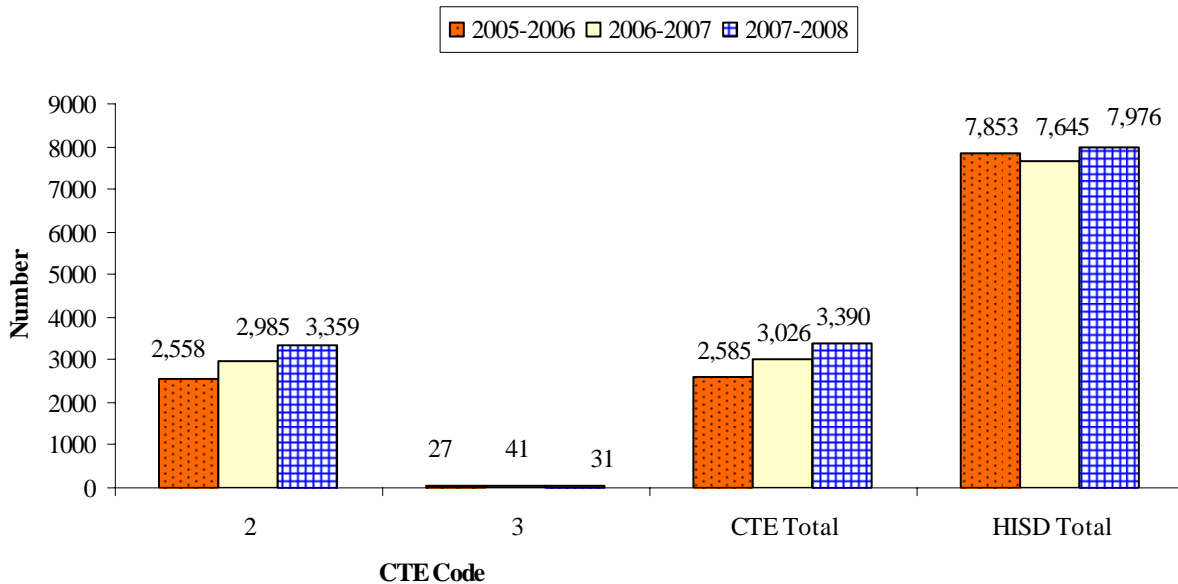


Figure 5. Number of graduates by CTE code, CTE total, and HISD totals 2005–2006 through 2007–2008.

Table 6. CTE Graduation Rates by Diploma Type, 2006–2008

CTE Code	Type of Diploma	2006		2007		2008	
		N	%	N	%	N	%
2	Completion of Individualized Education Plan	135	5.3	162	5.4	119	3.5
	Regular/Minimum	164	6.4	210	7.0	262	7.8
	Recommended	2,237	87.4	2,561	85.9	2,783	82.9
	Distinguished Achievement	22	.9	52	1.7	195	5.8
	Total	2,558	100.0	2,985	100.0	3,359	100.0
3	Completion of Individualized Education Plan	1	3.7	3	7.4	0	0.0
	Regular/Minimum	5	18.5	1	2.4	1	3.2
	Recommended	21	77.8	36	87.8	26	83.8
	Distinguished Achievement	0	0.0	1	2.4	4	13.0
	Total	27	100.0	41	100.0	31	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 2006, 2007, and 2008 graduating classes. The percentages of CTE students from the ninth-grade cohort graduating from high school in a four-year period remained relatively steady from the class of 2006 to the class of 2007 (79.9 percent to 79.4 percent). However, for the class of 2008, the percentage of CTE students from the ninth-grade cohort graduating from high school in a four-year period increased from the previous year by 5.3 percentage points to 84.7 percent.

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 continue to grow from the class of 2006 to the class of 2008. For the class of 2006, the four-year longitudinal graduation rate for CTE students was 79.9 percent, while the rate for HISD students was 67.1, a 12.8 percentage-point difference. This difference continued to increase for the class of 2007 to 15.1 percent and to 16.5 for the class of 2008.

Annual Dropout Rates

Table 7 (see page 22) presents the annual dropout rates (Grades 9 through 12) for CTE and HISD students for the 2005–2006, 2006–2007, and the 2007–2008 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 2005–2006 to 2007–2008, the fluctuations in the CTE annual dropout rates mirrored those of the district's annual dropout rates. In 2005–2006, the annual dropout rate of the CTE students (codes 2 and 3) was 3.6 percent, rose to 4.3 percent in 2006–2007, and decreased to 2.0 percent in 2007–2008. The annual dropout rates for HISD students was 6.5 percent (2005–2006), 7.2 percent (2006–2007), and 4.8 percent (2007–2008). For the three school years analyzed, the annual dropout rates for CTE students remained lower than the annual dropout rates for HISD students, with an average difference of 2.9 percentage points.

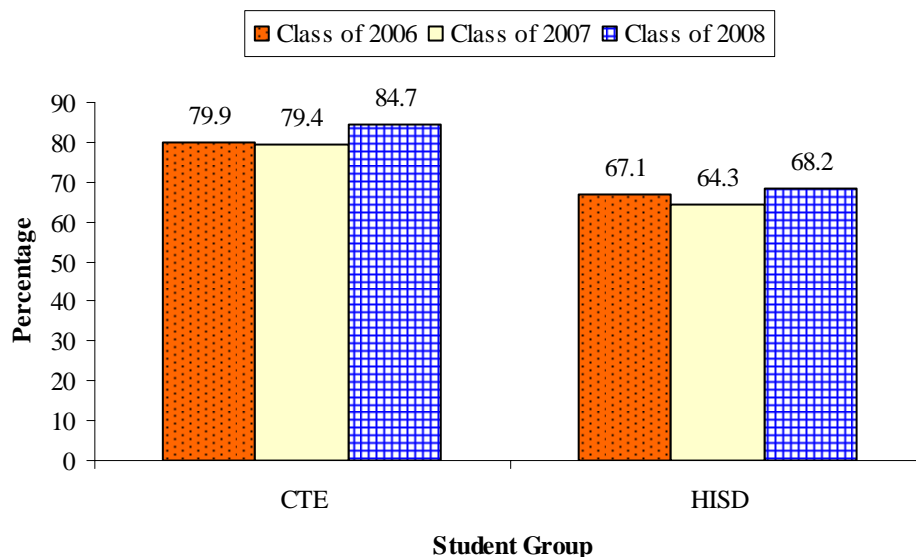


Figure 6. CTE⁺ and HISD* Four-Year Longitudinal Graduation Rates Based on Ninth Grade Cohorts, 2006–2008.

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

*Source: Secondary School Completion and Dropouts in Texas Public Schools Reports, 2007–2008.

Table 7. CTE and HISD Annual Dropout Rates, Grades 9 through 12, 2006–2008

	Academic Year								
	2005–2006			2006–2007			2007–2008		
	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 ⁺	477	13,287	3.6	630	14,714	4.3	274	13,724	2.0
HISD*	3,647	56,298	6.5	3,787	52,795	7.2	2,478	51,945	4.8

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

*Source: Secondary School Completion and Dropouts in Texas Public Schools Reports, 2007–2009.

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 be outperforming their non-CTE counterparts on TAKS subtests, especially those in a coherent sequence of courses. The higher performance by CTE students substantiates the belief that involvement in the CTE program can be beneficial for students. The number of CTE 2 and CTE 3 graduates with the Distinguished Achievement diploma rose from spring 2006 to spring 2007, although declined in 2008. In addition, students enrolled in CTE programming were found to have better 4-year graduation rates and lower annual dropout rates during the same time period, then the district's overall rates.

Currently, the CTE program offers rigorous academic and technical curricula, career counseling, business partnerships, as well as out-of-classroom learning experiences. 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. Given the success of the CTE EXPO, program personnel should continue to expand this program component. In addition to providing a platform for CTE students to display their work from their career-related courses, the EXPO serves as an advertisement of the program offerings within the CTE program. To greater promote the CTE program, parents and students from all elementary and middle schools should be invited to the CTE EXPO to expose younger students to CTE courses earlier in their academic endeavors. CTE administrators should consider holding the EXPO on at least one school day so that district teachers could bring students for an out-of-classroom learning experience.
3. 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*, 2007-2008

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
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, 2008–2009

	Total	AG	% AG	AC	% AC	AV	% AV	BS	% BS	ED	% ED
District Totals	17,577	483	2.7	498	2.8	518	2.9	734	4.2	903	5.1
School Name											
Austin	1,397	116	8.3	52	3.7	70	5.0	13	0.9	58	4.2
Bellaire	947	119	12.6	0	0.0	13	1.4	20	2.1	24	2.5
Carter Career Center	2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chávez	575	47	8.2	16	2.8	20	3.5	6	1.0	62	10.8
Contemporary Learning Center	109	0	0.0	0	0.0	2	1.8	8	7.3	4	3.7
Davis	267	0	0.0	0	0.0	21	7.9	0	0.0	63	23.6
DeBakey	956	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
East Early College	36	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Eastwood Academy	219	0	0.0	0	0.0	0	0.0	0	0.0	9	.1
Furr	43	0	0.0	6	14.0	0	0.0	1	2.3	0	0.0
Harper Alternative	15	2	13.3	5	33.3	0	0.0	0	0.0	1	6.7
Jones	27	0	0.0	0	0.0	2	7.4	0	0.0	10	37.0
Jordan	1,789	0	0.0	30	1.7	155	8.7	98	5.5	202	11.3
Kashmere	508	0	0.0	43	8.5	10	2.0	21	4.1	33	6.5
Lamar	1,423	162	11.4	98	6.9	0	0.0	177	12.4	5	3.5
Law E/CJ	948	0	0.0	0	0.0	0	0.0	111	11.7	17	1.8
Lee	331	0	0.0	20	6.0	16	4.8	12	3.6	17	5.1
Madison	695	22	3.2	0	0.0	9	1.3	33	4.7	98	14.1
Milby	728	0	0.0	0	0.0	58	8.0	17	2.3	11	1.5
Ninth Grade College Prep Academy	115	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
REACH	33	0	0.0	0	0.0	0	0.0	6	18.1	0	0.0
Reagan	261	0	0.0	0	0.0	0	0.0	6	2.3	1	3.8
Sam Houston Math, Science & Tech. Center	72	0	0.0	8	11.1	0	0.0	0	0.0	2	2.8
Scarborough	297	0	0.0	52	17.5	23	7.7	7	2.4	10	3.4
Sharpstown	107	0	0.0	0	0.0	5	4.7	9	8.4	24	22.4
Sterling	676	0	0.0	36	5.3	0	0.0	9	1.3	3	0.4
Waltrip	1,981	0	0.0	45	2.3	0	0.0	22	1.1	158	8.0
Washington	18	0	0.0	0	0.0	1	5.6	0	0.0	14	77.8
Westbury	881	0	0.0	33	3.7	13	1.5	40	4.5	18	2.0
Westside	1,029	0	0.0	10	9.7	71	6.9	0	0.0	0	0.0
Wheatley	661	0	0.0	0	0.0	0	0.0	34	5.1	40	6.1
Worthing	233	8	3.4	46	20.0	2	0.9	0	0.0	17	7.3
Yates	198	7	3.5	8	4.0	88	44.4	13	6.6	2	1.0

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, 2008–2009

	Total	FN	% FN	HS	% HS	HT	% HT	HU	% HU	IT	% IT
District Totals	17,577	708	4.0	2,169	12.3	363	2.1	1,398	8.0	5,785	32.9
School Name											
Austin	1,397	136	9.7	7	0.5	23	1.6	62	4.4	612	43.8
Bellaire	947	9	0.9	0	0.0	0	0.0	143	15.1	491	51.9
Carter Career Center	2	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0
Chávez	575	43	7.5	81	14.1	6	1.0	11	1.9	110	19.1
Contemporary Learning Center	109	11	10.0	0	0.0	0	0.0	8	7.4	47	43.1
Davis	267	0	0.0	10	3.7	70	26.2	43	16.1	29	10.9
DeBakey	956	0	0.0	805	84.2	0	0.0	0	0.0	151	15.8
East Early College	36	0	0.0	2	5.6	0	0.0	0	0.0	33	91.7
Eastwood Academy	219	20	9.1	36	16.4	0	0.0	0	0.0	112	51.1
Furr	43	0	0.0	3	7.0	0	0.0	5	11.6	20	46.5
Harper Alternative	15	0	0.0	0	0.0	3	20.0	0	0.0	3	20.0
Jones	27	1	3.7	1	3.7	0	0.0	0	0.0	7	25.9
Jordan	1,789	90	5.0	83	4.6	64	3.6	144	8.0	498	27.8
Kashmere	508	0	0.0	11	2.2	0	0.0	150	29.5	239	47.0
Lamar	1,423	163	11.5	96	6.7	63	4.4	100	7.0	294	20.7
Law E/CJ	948	65	6.9	11	1.2	0	0.0	0	0.0	291	30.7
Lee	331	31	9.4	47	14.2	0	0.0	22	6.6	122	36.9
Madison	695	20	2.9	0	0.0	0	0.0	95	13.7	216	31.1
Milby	728	2	0.3	112	15.4	7	10.0	84	11.5	257	35.3
Ninth Grade College Prep Academy	115	0	0.0	54	47.0	0	0.0	0	0.0	58	50.4
REACH	33	0	0.0	0	0.0	0	0.0	0	0.0	10	30.3
Reagan	261	15	5.7	106	40.6	0	0.0	0	0.0	96	36.8
Sam Houston Math, Science & Tech. Center	72	0	0.0	0	0.0	0	0.0	13	18.1	25	34.7
Scarborough	297	24	8.1	0	0.0	0	0.0	33	11.1	93	31.3
Sharpstown	107	3	2.8	9	8.4	0	0.0	0	0.0	51	47.7
Sterling	676	0	0.0	0	0.0	6	0.9	203	30.0	137	20.2
Waltrip	1,981	14	0.7	234	11.8	0	0.0	134	6.8	764	38.6
Washington	18	1	5.6	0	0.0	0	0.0	1	5.6	1	5.6
Westbury	881	10	1.1	148	16.8	0	0.0	89	10.1	250	28.4
Westside	1,029	25	2.4	264	25.7	62	6.0	0	0.0	435	42.3
Wheatley	661	0	0.0	49	7.4	59	8.9	0	0.0	237	35.9
Worthing	233	8	3.4	0	0.0	0	0.0	54	23.2	64	27.5
Yates	198	16	8.1	0	0.0	0	0.0	4	2.0	32	16.2

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, 2008–2009

	Total	LW	% LW	MN	% MN	MK	% MK	SC	% SC	TD	% TD
District Totals	17,577	545	3.1	907	5.2	1,028	5.8	820	4.7	718	4.1
School Name											
Austin	1397	0	0.0	38	2.7	143	10.2	67	4.8	0	0.0
Bellaire	947	0	0.0	0	0.0	21	2.2	0	0.0	107	11.3
Carter Career Center	2	0	0.0	0	0.0	1	50.0	0	0.0	0	0.0
Chávez	575	47	8.1			26	4.5	100	17.4	0	0.0
Contemporary Learning Center	109	0	0.0	9	8.3	20	18.3	0	0.0	0	0.0
Davis	267	0	0.0	0	0.0	17	6.4	1	0.4	13	4.9
DeBakey	956	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
East Early College	36	1	2.8	0	0.0	0	0.0	0	0.0	0	0.0
Eastwood Academy	219	0	0.0	0	0.0	0	0.0	42	19.2	0	0.0
Furr	43	0	0.0	0	0.0	0	0.0	8	18.6	0	0.0
Harper Alternative	15	0	0.0	0	0.0	0	0.0	0	0.0	1	6.7
Jones	27	0	0.0	0	0.0	6	22.2	0	0.0	0	0.0
Jordan	1,789	0	0.0	184	10.3	57	3.2	78	4.4	106	5.9
Kashmere	508	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0
Lamar	1,423	0	0.0	83	5.8	135	9.5	47	3.3	0	0.0
Law E/CJ	948	453	47.8	0	0.0	0	0.0	0	0.0	0	0.0
Lee	331	26	7.9	18	5.4	0	0.0	0	0.0	0	0.0
Madison	695	0	0.0	37	5.3	98	14.1	18	2.6	49	7.1
Milby	728	0	0.0	141	19.4	8	1.1	31	4.3	0	0.0
Ninth Grade College Prep Academy	115	0	0.0	0	0.0	0	0.0	3	2.6	0	0.0
REACH	33	0	0.0	0	0.0	17	51.5	0	0.0	0	0.0
Reagan	261	0	0.0	0	0.0	4	1.5	14	5.4	19	7.3
Sam Houston Math, Science & Tech. Center	72	0	0.0	0	0.0	1	1.4	0	0.0	23	31.9
Scarborough	297	0	0.0	25	8.4	0	0.0	30	10.1	0	0.0
Sharpstown	107	0	0.0	0	0.0	6	5.6	0	0.0	0	0.0
Sterling	676	0	0.0	45	6.7	52	7.7	44	6.5	141	20.9
Waltrip	1,981	0	0.0	57	2.9	351	17.7	122	6.2	80	4.0
Washington	18	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Westbury	881	0	0.0	37	4.2	45	5.1	62	7.0	136	15.4
Westside	1,029	18	1.7	139	13.5	0	0.0	5	0.5	0	0.0
Wheatley	661	0	0.0	86	13.0	0	0.0	113	17.1	43	6.5
Worthing	233	0	0.0	0	0.0	0	0.0	34	14.6	0	0.0
Yates	198	0	0.0	8	4.0	20	10.1	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.