

CHAPTER 2

Education and the Texas Work Force

Ensuring that more secondary students graduate with the knowledge and skills needed to pursue education and training beyond high school carries significant economic benefits. Individuals benefit from increased earnings potential, while the state enjoys improved economic performance through productivity gains and increased tax revenues.

State policymakers recognize these opportunities, and have made numerous attempts to improve the quality of our public schools, boost achievement among different student populations, prepare more students for college and increase the number of college graduates.

One such project – *Closing the Gaps* led by the Texas Higher Education Coordinating Board (THECB) – identified potential shortfalls in college attendance and graduation trends and developed targets to help eliminate them. Since the release of the first *Closing the Gaps* report in October 2000, the state has seen improvement in the share of bachelor's degrees earned by its college-aged population (those between the ages of 18 and 24). In 2000, 5.5 percent of Texas' college-aged population received bachelor's degrees; by 2005, that share had risen to 6.3 percent.¹

Aside from *Closing the Gaps*, other Texas policy changes intended to increase college graduation rates range from the creation of the state's public school accountability system, some decades ago, to the recent restructuring of the state's standard high school curriculum. From 2000 through 2006, the number of bachelor's degrees awarded by public universities in Texas rose by 21 percent, while the college-aged population increased by 22 percent.²

Despite such results, however, it is clear that Texas is not moving enough students through the state's educational pipeline. According to the THECB, just 61 percent of students who were seventh

graders in Fall 1995 graduated from high school on time, in Spring 2001 (**Exhibit 2-1**). Only 18 percent earned a college degree or certificate by Spring 2006, and only 43.6 percent had enrolled in higher education at all.

Career and Technology Education

Preparing high school students to earn bachelor's degrees is important for the state's economic future. The same can be said, however, for increasing the number of Texans who earn associate degrees and postsecondary training certificates.

The number of associate degrees awarded by public community and technical colleges in Texas rose by 50 percent from 2000 (24,810) to 2007 (37,309). Over the same time period, the number of postsecondary training certificates awarded rose by 32 percent, from 15,743 awards to 20,795.³ Nonetheless, recent evidence points to a shortage of workers for jobs requiring some postsecondary education, but not a bachelor's degree. Without rapid increases in postsecondary career and technology education (CTE) enrollment, existing worker shortages could worsen.

If these shortages of skilled workers persist, it may have significant negative consequences for individual Texans as well as the state's economy and state revenues. Persons with associate degrees, for example, can expect to earn \$340,000 more over their lifetimes than high school graduates with no postsecondary education. The difference is even greater in the case of a high school dropout, who can expect to make \$590,000 less than someone with an associate degree.⁴

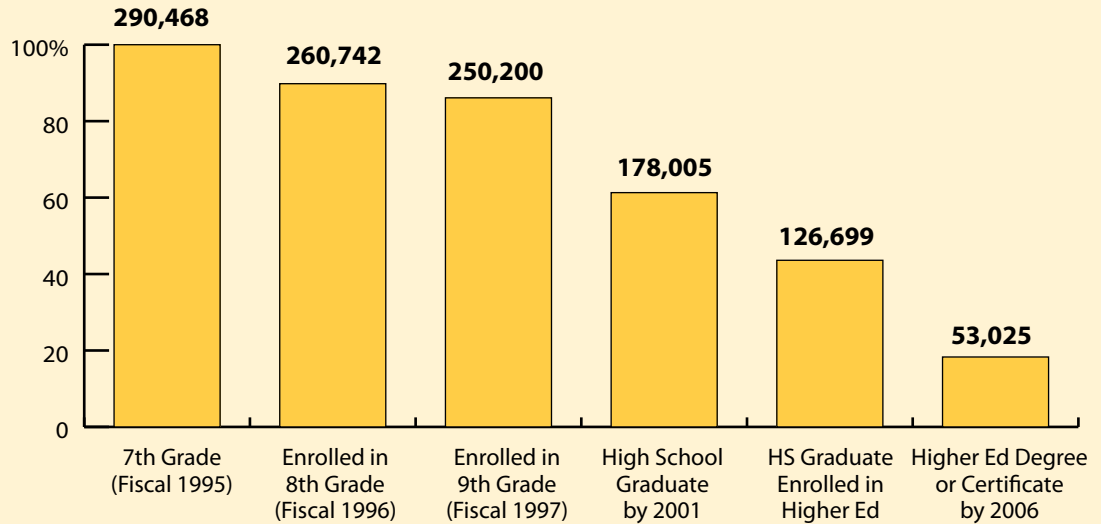
A lack of career and technology training opportunities, moreover, can lead to higher dropout rates, which can lead to fewer students taking postsecondary CTE courses and further reduce Texas' technically skilled work force. Recent data

Increasing the number of Texans who earn associate degrees and postsecondary training certificates is important for the state's economic future.

"Our Workforce Development Area has around 98,000 in the labor force. Seventy to 80 percent of the positions do not require a four-year degree, but do require postsecondary education."

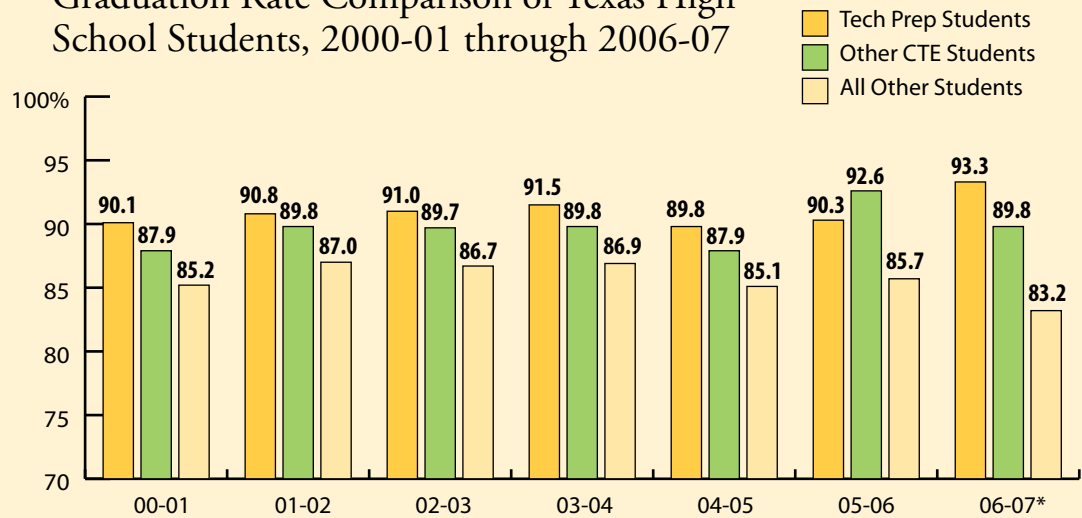
—**Rogelio Treviño,**
Executive Director,
Workforce Solutions
South Texas

EXHIBIT 2-1
Educational Attainment of 1995's
Texas Seventh-Grade Students by 2006



Source: Texas Higher Education Coordinating Board.

EXHIBIT 2-2
Graduation Rate Comparison of Texas High School Students, 2000-01 through 2006-07



*NOTE: 2005-2006 and 2006-2007 data began new baseline using a revised formula to calculate data.

Source: Texas Education Agency.

Studies have found that CTE courses improve graduation rates and reduce dropouts.

from TEA show that high school students who take courses in career and technology education through a Tech Prep program have higher average graduation rates (**Exhibit 2-2**) and are less likely to drop out⁵ (**Exhibit 2-3**) than those students who do not participate in Tech Prep.⁶ (Tech Prep is a program that allows students to start a college technical major in high school. It combines academic and technical courses and allows students to earn college credit through content-enhanced courses, dual credit and College Board Advanced Placement testing.)

Other studies have found that CTE courses improve graduation rates and reduce dropouts. A review of numerous CTE studies found there is solid statistical evidence that CTE courses actually play a role in reducing dropout rates, especially among students who are at high risk of dropping out.⁷ Research also shows that CTE courses increase future earnings, with students who spent about 17 percent of their time in high school on occupation-specific courses earning at least 12 percent more one year after graduation and about 8 percent extra seven years later.⁸

Discouraging CTE?

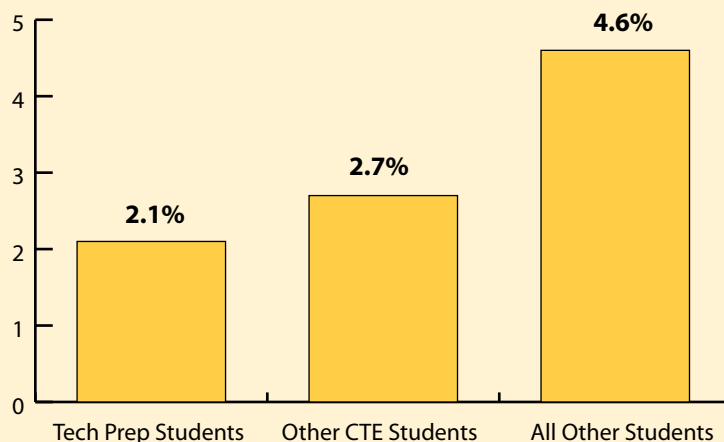
Despite such findings, Texas continues to direct more students toward the academic track rather than CTE.

For instance, recent curriculum changes commonly called “four-by-four” requirements make four years of math and science standard for Texas high school students. These requirements may limit students’ ability to pursue studies geared toward technical and industrial careers.⁹ And any reduction in the pool of available skilled technical workers presents a challenge to Texas businesses striving to maintain a competitive edge.

Similarly, a rule recently proposed by THECB would remove many CTE courses from the uniform calculation of GPAs for college admission. THECB’s stated reason for this proposal was that the basis for determining the state’s uniform GPA calculation should be focused on courses that prepare students for university work, since universities are the only institutions that consider GPA in admissions. Many CTE courses are closely

EXHIBIT 2-3

Dropout Rates of Texas High School Students



Source: Texas Education Agency.

related to programs offered only by community and technical colleges that have open admissions policies that do not take GPA into consideration.¹⁰

Such measures, however, may imply that the state does not consider CTE as valuable as academic courses, and may suppress enrollment in CTE courses.

Job Demand

Policies that impede CTE are clearly counterproductive at a time when the state’s employers need more skilled workers holding an associate degree or vocational certificate.

According to the Texas Workforce Commission’s projections, Texas will have an average of nearly 44,000 job openings annually through 2016 for occupations requiring an associate degree or post-secondary vocational award. Occupations requiring a bachelor’s degree will see more than 68,000 job openings each year. Master’s and doctoral degree holders can expect around 9,000 and 3,000 annual average job openings, respectively.¹¹ By contrast, Texas’ public universities, colleges and health-related institutions awarded just 36,442 technical associate degrees and certificates in

Shell: Working to Energize the Work Force

Shell Oil Company believes that employee talent is a key ingredient to maintaining Texas' energy lead in oil, natural gas, petrochemicals and new energy development. The energy industry is facing an unprecedented number of retiring baby boomers — workers born between 1946 and 1964 — that will create a serious talent shortage. In Shell's case, about half of the company's work force is eligible for retirement in the next five to 10 years. It is essential that their knowledge and skills be replaced.¹²

Shell is expanding its refining, deep-water gulf drilling and alternative energy businesses in the face of a potential shortage of qualified technical workers. While some of these jobs require a four-year degree, many others require a two-year technical degree — and many of the latter pay very well.¹³ For example, jobs in field operations and maintenance crafts (electrical, mechanical, and instrumentation), and on-site wind energy technicians start at \$50,000 or more annually. As one Shell manager notes, "It is not unusual for a person entering into these jobs to see their future earnings in the high five figures and even above \$100,000."¹⁴

A Shell executive notes that technical community colleges offer a number of benefits for work force training. They can develop courses and train students quickly, cultivate qualified minority candidates and speed their graduates' transition to the work force. Shell works with more than 40 community colleges across the U.S. to foster technical training.

A few examples of Shell's initiatives to increase the number of qualified energy workers include the following:

- to address the need for qualified field and plant employees, Shell offers an internship program with two-year technical/community colleges to provide 75 to 100 internships annually. These paid internships provide students with work experience, the opportunity to explore a career with Shell and, for some, even a full-time job offer.
- for four-year college/university engineering and business students, Shell offers 250 to 300 internships annually from colleges across the U.S.
- Shell's "Energize Your Future with Shell" is a work force and talent development program designed primarily for middle and high school teachers and students. Through the program's Web site (<http://www.shell.com/us/energizeyourfuture>), students can explore the world of energy and learn about the diversity of energy careers. The site also provides teachers with lesson plans, worksheets and classroom activities designed to pique students' interest in the energy field.
- Shell is one of the leading companies sponsoring and participating in the Houston A+ Challenge: Teacher Externship Program, a weeklong summer program that pairs secondary school teachers with area businesses. The program's goal is to send teachers back to the classroom reenergized to teach their students about work opportunities and what it takes to reach their goals. In 2008, more than 275 teachers and numerous Houston-area companies participated in the program.

Shell notes that more efforts are needed to document winning programs that support excellence in math and science and help them grow, so that Texas can expand its supply of qualified technical workers. Through the power of collaboration with industry, educational institutions, economic development and government entities working together, Texas can be a technology leader in energy. As one Shell manager notes, "If Texas is known to have work force talent, more companies will locate and expand in the state. It is up to Texas to lead or lose its energy lead."¹⁵

2007, compared to 78,863 bachelor's degrees and 28,477 master's and doctoral degrees.¹⁶

But beyond the statistics, an inadequate supply of and skilled workers could also mean lost potential for individual Texans. As we have seen, foregoing postsecondary education can lead to a tremendous

loss of income over a lifetime. And contrary to popular perception, thousands of jobs that pay above-average wages require less than a bachelor's degree.

In Texas, occupations that require an associate degree or postsecondary vocational award/certifi-

Kirby Inland Marine

The Kirby Inland Marine Corporation operates a thriving fleet of inland tank barges and towing vessels along America's inland waterways. More than 1,500 Kirby employees crew boats along the Gulf Intracoastal Waterway, the Mississippi River, the Illinois and Ohio rivers and other waterways. Kirby Inland has 887 active barges and about 160 towing vessels divided into five fleets.¹⁷

In response to shortages of skilled maritime workers, Kirby supplies potential and current employees with training courses at their state-of-the-art facilities in Channelview, Texas. Every year, the training center issues over 1,000 training certificates to Kirby workers, customers and United States Coast Guard personnel. The training campus houses dormitories, a dining hall and multiple classrooms. Along with classroom instruction, trainees gain experience through simulators. New employees begin earning a salary upon beginning a training course.¹⁸

Kirby Inland's Steersman Program features both tankerman and deckhand career tracks, both of which offer employees starting salaries of about \$30,000, rising to \$55,647 annually after 18 months.

The tankerman track requires U.S. Coast Guard licensing through classroom instruction offered at the Kirby training school. The deckhand track offers similar opportunities for advancement but allows mariners to move up through on-the-job training offered on deck.

Graduates from a four-year accredited maritime college or potential employees who have a Third Mate's license can quickly ascend the career ladder to become a pilot making \$95,520 annually.¹⁹

cate pay an average of more than \$40,000 annually, compared to the average pay of less than \$25,000 for those with only a high school diploma or less. The right bachelor's degree can mean an annual average wage of almost \$59,000; master's and doctoral degree occupations pay an annual average salary of about \$60,000 and \$65,000, respectively.²⁰

Within each educational attainment category, of course, some occupations pay above or below the average based on the supply and demand of labor for a given occupation. If specific occupational skills are in high demand, their price goes up. Today, some traditionally lower-paying occupations are experiencing high demand and paying relatively high wages; examples include welding and licensed practical and vocational nurses.

Simply increasing the number of college graduates is not necessarily the most effective way to address the work force needs of employers and the Texas economy. Texans have a variety of options for publicly funded postsecondary education or training, though some students may not be aware of them due to the state's increasing emphasis on four-year degrees. One must also consider the *types* of degrees, and more importantly, the actual skills

and competencies students obtain, and how these mesh with employer demand.

The nationwide nursing shortage, for instance, has received widespread publicity. Some parts of Texas face acute shortages of these vital workers and the state has taken steps to increase the supply of nurses and other health-related occupations.²¹ There is less awareness, however, of Texas' shortage of various technical specialists — welders, aircraft technicians, chemists, competent machinists, tool and die makers and more. These shortages have a direct impact on the competitiveness of Texas companies as well as our ability to recruit new employers.

Businesses looking to relocate to other regions, states or countries often use consultants to help them evaluate prospective sites based on a number of criteria such as corporate tax rate and permitting processes. According to one survey of such consultants, one of the top factors in such decisions is the availability of skilled labor.²²

It is thus clear that Texas must continue to increase the supply of skilled and educated workers if it is to retain the economic edge it has had over other states in recent years. In addition to increas-

"In this area, we need more mechanics and process flow technicians. You don't need a four-year degree for these jobs, but you will need specialized training. With a relatively small amount of time and money, we can reap some future rewards."

—Roger Creery,
Executive Director,
Laredo Development
Foundation

Austin Community College Game Development Program

A newly established two-year program offered by Austin Community College (ACC) trains students for careers in computer game development. The program's curriculum spans different aspects of gaming technology, providing training for those interested in programming, design and graphic art. In addition to traditional classroom experience, the program includes hands-on experience in game development. Industry professionals teach the program's courses.

The program allows students to choose from three possible tracks: programming, art and design. A handful of courses are required for all students, but they also choose from several electives pertaining to their areas of specialization. The culmination of the program is a "capstone project" in which students work in teams under the guidance of a mentor to create a game demo that is then evaluated by industry professionals. Once completed, students can include results from the capstone project in their portfolios to help them secure a game development position.²³

While ACC has offered traditional technology and art programs in the past and continues to do so, several departments collaborated to make the new game development program a reality. Its goal is to offer a more focused curriculum for students who are specifically interested in game development. For instance, a student who might have otherwise focused on general computer programming can now specialize in game programming.²⁴

Unsurprisingly, students have already shown strong interest in the program: 100 enrolled for the 2008 fall semester. The greater challenge to the program's success may be to convince parents of the program's value. The outlook for graduates, however, is bright — the state's gaming industry remains fairly strong, bolstered by the growth of central Texas businesses such as BioWare Austin and Schell Games. Beginning game programmers and game artists can expect to earn an annual salary of \$55,000 or more.²⁵

"We have absorbed 50 percent of the local community college graduates, but we still have 40 openings. We have to 'hire-out' for contract labor to fill our nursing shortage."

—Mike Hartly, Director of Medical Services, Laredo Medical Center

ing the number of students earning bachelors' and advanced degrees, Texas' economic prospects will turn on its supply of skilled workers with technical certificates and associate degrees.

Endnotes

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- ¹² Interview with Monte King, manager of Work Force Development, Shell Oil Company, October 29, 2008.
- ¹³ Interview with Richard E. Williams, president of Shell Wind Energy, October 24, 2008.
- ¹⁴ Interview with Monte King.
- ¹⁵ Interview with Monte King.
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Real People, Real Stories

Myrna Gonzalez

One day not so long ago, Myrna Gonzalez realized she didn't have enough money to buy her kids lunch. That was the turning point for her — the event that pushed her into a new career, and a new life.

Myrna and her husband Modesto, who was unemployed at the time, were trying to find enough recyclable material to turn in for cash to buy their children a pizza. They didn't succeed. "I said to myself, 'I've had it with this; I've had enough. I've got to do something more for our kids,'" she recalled.

She borrowed a PC and went online, where she found information about Texas State Technical College at Harlingen. Surgical Technology Chairman Robert Sanchez reviewed her transcripts and helped her enroll in January 2006.

Modesto, who enrolled in truck driving school, spends most of his time on the road as truck driver. He and their three children joined Myrna to celebrate at the TSTC summer commencement in August 2007. She immediately began a new job as a certified surgical technologist with Doctors Hospital at Renaissance in Edinburg, earning up to \$18 an hour.

"Graduation made me feel like I made it. Even though I went through difficult times, it was worth it," she said.

Special thanks to Myrna Gonzalez and Texas State Technical College for sharing this success story.