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ACHIEVE!

An Update on Student Retention Issues

This newsletter, published periodically as part of the League's student retention study, provides information on various aspects of the dropout problem, legislative issues relating to the crisis, prevention programs, and ways to encourage student retention.

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Narrowing The Skills Gap

Our American school system was set up to teach students skills needed for a mass-production, Tayloristic workforce. In the Taylor model only managers needed higher order thinking skills, while frontline workers required only minimal math and literacy skills to perform assembly-line jobs. In a mass-production economy, many illiterate workers could still get by and make a decent living. This type of economy brought about great productivity, and a good standard of living because it mainly depended on cheap natural resources. The U.S. flourished under this type of mass production economy for many years (Robert W. Glover and Ray Marshall, "Improving the School-to-Work Transition of American Adolescents," p. 3-5, unpublished).

Nationwide only about 50% of high school students actually attend college upon graduation from high school (a much higher percentage of students say they will attend) and about 20% of American youth complete a 4-year degree (U.S. General Accounting Office, *Transition form School to Work: Linking Education and Worksite Training*, p. 2). Following the mass-production model, our high schools take great care to teach higher order thinking skills to this top 50% and virtually ignore the skills needed by the non-college bound. This is unfortunate considering that over 70% of the jobs in America will not require a college education by the year 2000 (National Center on Education and the Economy, *America's Choice: high skills or low wages!*, The Report of the Commission on the Skills of the American Workforce, Executive Summary, p. 3).

Because of technological advances and global competition, today's information economy relies on human capital. For example, Germany and Japan have assured that their non-college bound are highly skilled through tough academic requirements and vocational training in high-tech

About This Issue

Many employers have complained about the lack of skills in today's workforce. Some criticize the lack of basic skills, while others contend that workers are ill prepared for the needs of the modern work place. This issue of *Achieve!* explains changes in the economy that may cause a skills gap, as well as ways that employers and educators can work together to improve the skills of today's workforce.

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vocational schools (Japan), and youth apprenticeships (Germany). An investment in human resources can yield better employees who may produce quality goods and services. Whereas a mass production economy is quantity focused, the information economy is more quality focused (Glover and Marshall, p. 4).

America's Choice: high skills or low wages! points out that many of the country's most successful companies have changed from a Tayloristic form of organization to one of high-performance work (National Center on Education and the Economy, p. 2). Front-line workers in these companies make decisions and solve problems themselves instead of having management do these things for them. High performance work organizations spend more on training, cut mid-level bureaucracy, use cutting edge technology, pay frontline workers higher wages, and offer career paths that are tied to skills. They emphasize producing quality products by reducing errors, enhancing work performance, and eliminating costs. The result is higher quality products and services that are more competitive in the global economy.

Though many very successful companies have transformed into high-performance work organizations, **most American companies still operate under the hierarchical, Tayloristic, mass-production model.** In order to compete, these companies have taken a low-wage strategy and may not see the need for highly skilled workers. Marc Tucker, President of the National Center for Education and the Economy, describes the choice between high skills and low wages as being a choice between competing against Germany and Japan (high skills), or competing against Mexico and the Philippines (low wages). Third world and newly industrialized countries are able to pay workers very low wages. Following the course of low skills and low wages could eventually lead the U.S. into a two-tiered economy where the affluent get richer and the middle and lower classes experience a loss in earning power. Gone will be the American dream of a high standard of living. As it is, many U.S. families have held on to a good standard of living by having two wage earners. But, if skill levels remain low, wages will plummet and even with two bread winners, standards of living will drop.

Texas is Moving Toward National Goals

One of the National Education Goals agreed upon by the 50 state governors and the President is that:

Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and to exercise the rights and responsibilities of citizenship.

There are indications that Texans are interested in cultivating a highly skilled workforce. Local business leaders are getting involved in their schools through their local Chambers of Commerce, industry associations, or by means of company initiatives. They realize that good schools foster a good workforce and attract business to their communities. For example, Fort Worth and Austin use a highly educated and skilled workforce in order to attract high-tech manufacturers. (See shaded boxes)

SCANS Identifies Required Skills

If Texas chooses the high skills course, what are the skills that are necessary for a high performance workforce? The Secretary of Labor's Commission on Achieving Necessary Skills report, *What Work Requires of Schools: A SCANS Report for America 2000*, outlines the skills and competencies to be taught by schools, so that our country can compete internationally. SCANS identifies three types of skills that make for a good foundation: basic skills, thinking skills, and personal qualities. Basic skills are reading, writing, arithmetic/mathematics, listening and speaking. Thinking skills include **creative thinking, decision making, problem solving, knowing how to learn, and reasoning.** Personal qualities include **responsibility, self-esteem, sociability, self-management, and integrity/honesty.** The Commission also identified five competencies that interact with foundation skills:

Resources-the ability to identify, organize, plan, and allocate resources.

Interpersonal-the ability to work with others.

Information-the ability to acquire and use information.

Systems-the ability to understand complex inter-relationships.

Technology-the ability to work with a variety of technologies.

The SCANS report emphasizes that the interplay and integration of these skills and competencies is crucial.

Learning a Living: A Blueprint For High Performance, the SCANS final report, offers these recommendations for teaching the SCANS skills and competencies:

- Teaching should be offered in context. "Learning in order to know" should not be separated from "learning in order to do."
- Improving the match between what work requires and what students are taught demands changing how instruction is delivered and how students learn.

SCANS encourages schools to teach students these skills by having them solve real-life problems. Unfortunately, many teachers go straight from college into teaching, and therefore have limited work experience outside of the schools. This often makes it difficult for teachers to answer the question "When are we ever going to use this stuff again?" Interaction with employers and teachers can give students these answers.

After the first SCANS report was released, many educators questioned if these were really the skills needed in the workforce. The Lyndon Baines Johnson School of Public Affairs at the University of Texas at Austin in its report *Bridging the Gap: Implementing School-To-Work* in Austin, points out that:

1) many other groups (including some states and cities) have come up with lists of skills and competencies that differ in terminology, and add or delete a skill or two, but by and large are extremely similar, and

2) employers are very concerned about the thinking skills and personal qualities of workers. The recent trends in work force organization have intensified the need for workers with problem solving skills. The changes in the American family (e.g. single parent families, and both parents working) have contributed to deficiencies in desirable personal qualities.

In Austin Texas, teachers came up with interesting assignments and activities for their classrooms that related to the health care field. The **Austin Independent School District** piloted a summer project called **Pathways to Health Care Professions**. Four high school teachers from three different high schools that offered health careers courses were sent to shadow (follow and closely observe) different health care workers at two local hospitals. Each high school team of teachers had representatives from academic subjects like mathematics, English, and science, as well as one health careers teacher. This group of teachers observed surgeons, emergency medical technicians, nurses, medical records technicians, X-ray technicians, and pharmacists to name a few. The teachers then worked on curriculum and lesson plans. The program lasted about a month and these teachers received a stipend for participation in the program.

From what they observed, these teachers found validity in the SCANS skills. Several teachers mentioned that observing surgery brought home to them the importance of teamwork in the workplace. Another teacher said that she realized schools often only require kids to achieve a 70%. She questioned, "Would you want to go to a doctor that only gave 70% ?" Another teacher discussed bringing this point home by assigning a pharmacist-oriented worksheet where fractions and decimals are used for prescriptions. She said instead of putting a grade on an incorrect paper, she would write the word DEAD on the paper. Other teachers realized that they had a responsibility as teachers to expose their kids to a range of different careers, and to serve as career counselors as well as teachers. The teachers were amazed at all the different types of jobs in a hospital, as well as all the differing types of requirements in education and training.

Many educators will argue that these skills are taught in the schools, and that their students are prepared for entry-level jobs. Employers will argue to the contrary.

Employers and Teachers Work Together to Improve Students' Skills

The *Bridging the Gap: Implementing School-To-Work* report emphasizes that the best way to get these skills taught is to get business leaders involved with teachers:

"Direct interaction between teachers and employers provides continual reassessment and updating of curricula, permitting the school to keep pace with changes in the modern workplace. Only business has the expertise to imbue academics with real world applications, and only teachers have the expertise to know how to package this skill development for the classroom."

The shaded boxes contain examples of employers and teachers working together to change curricula so that workplace skills are taught. Often in working for education reform, business leaders communicate their frustrations and suggestions to the school board or to school administrators. Their concerns don't always make it down to the frontline teacher. When they do, their concerns often reach teachers as mandates that cause animosity and resistance. By setting up a dialogue with teachers at the workplace or in the classroom, business can help insure that schools teach the necessary skills with an added benefit of energizing the classroom.

Project GEMMA brought 18 Dayton-Montgomery County Ohio educators into local company internships during the summer of 1991. (Ann M. Farrel, "What Teachers Can Learn from Industry Internships," *Education Leadership*, March 1992 p. 38-39). The group consisted mostly of math and science teachers from high school, junior high, and 6th grade, along with an elementary school principal and elementary school computer specialist. This group of teachers was able to work with engineers, environmental consultants, marketing analysts, physicists, and material scientists to name a few. The Project GEMMA teachers went back to their classrooms in the fall with numerous real-world applications of the math and science concepts that they taught. Through these internships these teachers also saw that teamwork, interpersonal /communication skills, problem solving skills, and technology literacy are crucial to today's workforce. These teachers planned to include more cooperative learning activities, to assign more open-ended problems where students discuss options and come up with a "best" answer, and to push for integrating technology across ability levels in all subjects.

Texas Workforce Needs Are Changing

It is important for Texas employers and teachers to change our schools, because Texas workforce needs are changing. For most of its history, Texas has produced considerable wealth by virtue of its natural resources. Oil and gas exploration and production, and farming and ranching were mainstays of the Texas economy. These industries also employed workers who needed relatively low educational levels, providing employment opportunities for the poorly educated, including high school dropouts. Consequently, education was not a priority for many Texans. The rapid fall of the old economic order forced business and government leaders to reconsider the role played by education in developing the state's economy. Reflecting national sentiments, Texas business leaders began to speak of the need to compete globally on the basis of human, not natural, resources.

During the 1980s major changes took place in the state's economy. Figures 1, 2, and 3 illustrate how these changes affected employment. Employment growth was only 20% in the 1980s, well below levels that occurred during the 1960s (43% growth) and 1970s (61% growth). The service sector (which includes government; wholesale and retail trade; finance, insurance and real estate; transportation and public utilities; and health, legal, personal and business services) accounted for most of the employment gains. The service sector represented about 79% of employment at decade's end compared to 71% in 1980 (Texas Employment Commission, "The

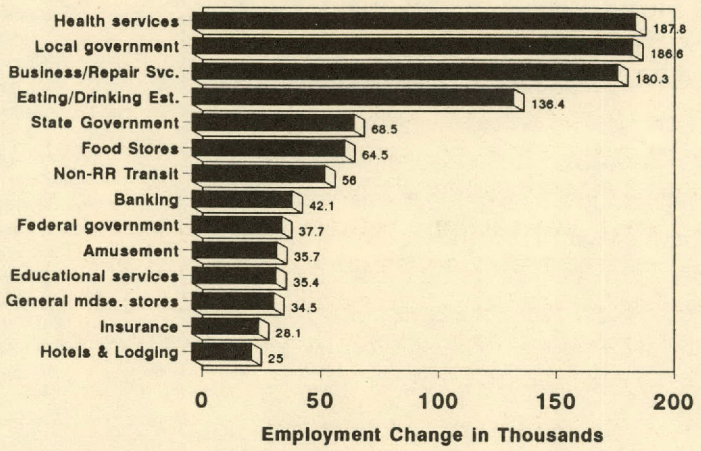
Texas Economy," *Texas Business Today*, May 1991, pp. 1-7).

Fourteen industries accounted for 96% of the net change in payroll employment (see Figure 1). Three areas alone account for 43% of that change: health services, business services (a diverse category including such things as advertising, credit reporting, direct mail, commercial art and design, equipment rental, and computer-related services), and eating and drinking establishments. One-half of the new jobs in retail trade were in eating and drinking places.

Declines in the goods-producing sector were significant (See Figure 2). The oil and gas extraction industry lost 123,000 jobs from its peak in 1982. These jobs are not expected to return due to the decline of the oil industry. Fifty-two thousand jobs were lost in the industrial machinery and computer equipment category. In the early 1980s, 40% of the machine industry workers were employed in oil and gas machinery. The loss in machinery jobs was therefore tied to the decline in the oil and gas sector. Construction and construction-related industries also suffered significant employment losses due to the over building of commercial real estate during the boom in the early 1980s. The decline in the construction sector may only be temporary, depending on an upswing in the economy.

Figure 1

Industries Adding the Most Jobs State of Texas: 1980-1990



Source: Texas Employment Commission

In terms of occupations, the most jobs were added in the service sector, with janitors, maids and cleaners leading the list. The 20 occupations listed in Figure 3 employ one in three Texas workers. Significantly, many occupations adding jobs required relatively low educational levels. This growth in low-skill, low-wage occupations reflects changes in the American economy. Employment shifts during the 1980s point to a replacement of relatively high-skilled production and trade employment by less-skilled (and lower-paying) jobs in the service sector.

Frederick County Maryland borders the Appalachian Mountains and formerly consisted of many agriculture-based communities. In recent years, the county has become home to many new high-tech businesses. Frederick County school district brought medical doctors, local business professionals, employees of the National Institute of Standards and Technology (N.I.S.T.), the Burroughs Corporation, the U.S. Public Health Service, the National Institutes of Health, and the U.S. Army's chemical- warfare laboratory at Fort Dietrick to observe science classes from elementary through high schools. They were to make recommendations to improve the K-12 science curriculum to meet the needs of the new technically oriented community. These scientific auditors were able to interview students and teachers as well. The auditors volunteered their time. As a consequence of getting involved, many auditors have more of an interest in the local schools and will work with educators to improve the science curriculum. Many auditors also claimed that they had a new respect for classroom teachers as a result of the audit. Teachers may find that they have business contacts they can use as class speakers, or as resources for real-life applications of the concepts they teach. (Peter West, "To Keep Pace With Change, Maryland District Taps Science Community To Conduct Audit," *Education Week*, April 22, 1992 pp. 6-7.)

This situation has led many to observe that Texas is choosing to compete in the global economy on the basis of low-wage, low-skill jobs. This has dire consequences for the state's future economic well-being. Poorly paid workers are not "good for business," because they lack the purchasing power of better educated workers. Some working poor may find it more lucrative to choose welfare and medicaid than to work for low wages and no benefits. Furthermore, low-wage jobs mean low tax revenues for the state (Texas Research League, *Putting the Pieces Together: Texas Business and Dropout Prevention*, p. 59).

Though service sector jobs are not always low-wage, business people and policy makers believe that relying solely on services is like building a house of cards. It is very fragile without a good manufacturing base. Policy makers believe Texans should not base an economy solely on going to each other's restaurants, selling each other insurance, and cleaning each other's houses. Without producing goods that other states and countries can use, consumers may not have the money to spend on services. Part of a prosperous future for Texas is producing **quality** products and services that are competitive compete in a global economy. Quality can only be achieved by investing in an educated workforce.

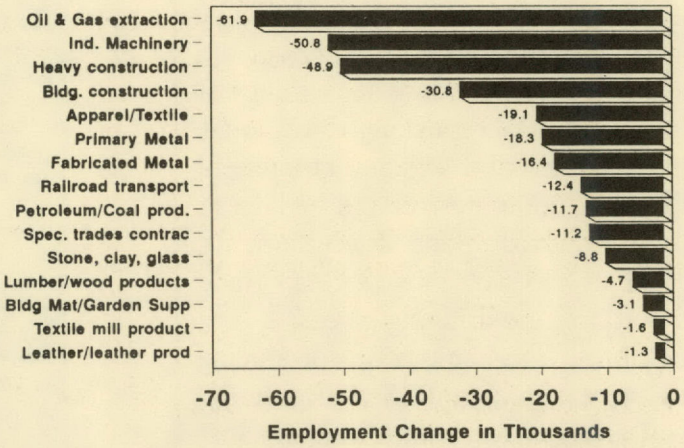
How can employers best contribute to schools? Business can invest some of its resources in local school districts through:

- providing classroom speakers,
- contributing volunteers for curriculum audits,
- organizing company tours for students or teachers,
- offering teacher internships, and
- granting teachers job shadowing opportunities.

These activities impact curriculum changes, classroom activities, and instructional techniques. This type of business involvement in schools can highlight the importance of thinking skills and personal qualities in a way that is meaningful to students and teachers, and can result in a highly skilled workforce. **If business offers this kind of assistance, teachers must be accountable for making changes in their classrooms.** But

Figure 2

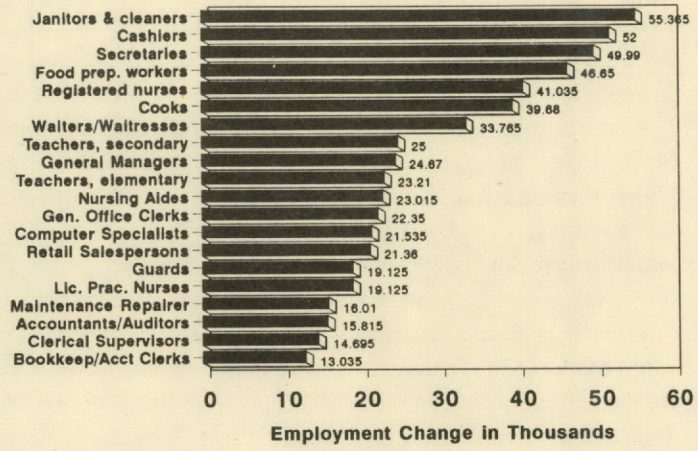
Industries Losing the Most Jobs State of Texas: 1980-1990



Source: Texas Employment Commission

Figure 3

Occupations Adding the Most Jobs State of Texas: 1980-1990



Source: Texas Employment Commission

Fort Worth Independent School District was able to revise its writing curriculum as a result of teacher internships and visits with local businesses. The internships were a result of the district's involvement with **Project C3** (Communities, Corporations, and Classrooms,) and the **Vital Link** program of the American Business Conference. English teachers who interacted with local businesses found many differences in the types of writing required at school compared to the types of writing required at work (see Table A). Along with the differences displayed in Table A, teachers found that writing at work often was affected by social and political considerations that are usually not present at school. The teachers also discovered that the writing valued at school was the five paragraph theme with lots of adjectives, adverbs, similes, metaphors, and figurative language, while the workplace valued concise writing that addresses the key topics and information the reader needs. As a result the Fort Worth teachers saw the need to balance the writing curriculum with both academic and workplace writing assignments.

Fort Worth I.S.D. also has supported offering academic courses that have an applied focus. Chemistry teacher David Dollar directed a project where students were to recommend the most effective, economical, and environmentally safe grass fertilizer for the Fort Worth I.S.D. Grounds and Maintenance Department. Dollar's students learned chemistry through these assignments:

1. Preparing a basic project plan including projected costs and a research time table.
2. Submitting a proposal to the principal requesting funds for the project.
3. Requesting information on current fertilizing practices from the Grounds and Maintenance Department.
4. Requesting information from plant nurseries and fertilizer companies on types of fertilizers and their compositions.
5. Interviewing plant specialists to get ideas and information on grass types and fertilizers.
6. Researching the basic types of grass and the fertilizer requirements for the different grass types on the school grounds.
7. Researching the price, percent composition, and environmental safety of various brands of commercial fertilizer.
8. Recommending, based on their research, a fertilizer that is the most effective, economical, and environmentally safe for the district campuses.
9. Producing a log of all their work and a manual so that others can monitor or replicate their efforts.

This type of project incorporates skills and knowledge from all disciplines, and it makes chemistry particularly meaningful to students.

Table A

Writing: The SCANS Perspective

What Today's Schools Teach	What the Workplace Requires
Purposes for Writing	
• Central purpose is to display mastery of knowledge, skills, and format	• Range of purposes (instrumental): inform, persuade, clarify (or obscure), soften the blow, explain how to do something, tell others to do something, make a recommendation, sell
Types of Writing Routinely Generated	
• Essays, book reports, poetry, stories, research papers, letters	• Reports, brochures, letters, memos, proposals, surveys, ad copy, instructions, planning documents, messages, specifications, recommendations, logs, legal documents/contracts, news releases, minutes, personnel evaluations
Audience	
• Single audience: the teacher	• A range of audiences, including people differing in needs, motivations, uses for the information, and knowledge of the topic, e.g., supervisors, clients, co-workers, subordinates, the general public
Work Conditions	
• Deadlines and distractions controlled by teacher	• Deadlines and distractions often unavoidable
Content	
• Teacher assigns topics • Reveals everything discovered	• Ill-defined problems are worked through • Tells what the reader needs to know
Logic	
• Theoretical:"academic"	• Problem solving, pragmatic, goal-oriented
Correctness	
• Usage, handwriting, spelling, punctuation a focus, accounting for 50 to 100 percent of the document's value	• Same factors are given, not a focus for evaluation

Source: Fort Worth Public Schools in Learning A Living: A Blueprint For High Performance.

business must also show that they will value and hire highly skilled high school graduates by requiring high school transcripts from job applicants and possibly by requiring a teacher as a reference, if the applicant has no work experience.

How the business community organizes work in the future will depend upon the skill levels of its employees, and vice versa. Faced with a poorly-educated work force, business may respond by creating more low-skill, low-wage employment, thus limiting future economic growth. Similarly, faced with limited job opportunities, American students may lose the motivation to stay in school and to achieve academically. Seen in this context, the participation of business in keeping students in school and in reforming the educational system, so that students graduate with more skills, is imperative.

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