Taking Action on the SCANS Report

A report by the U.S. Department of Labor outlines what tomorrow's employees will need to put their knowledge to work and *what schools and employers must do to ensure that today's students graduate with these competencies.*

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This year, thousands of high school students are sitting in traditional chemistry classes listening to their teacher lecture about molecules and compounds. Behind the teacher is a large chart of the periodic table of elements. Students are taking notes and, before their next big exam, they will try to guess what Mr. Jones will ask on the test. They will then try to memorize the properties of the key molecular structures from a replica of the chart in their textbook.

Many students in the school, especially the females, already have decided not to take Mr. Jones's chemistry course. College-bound youngsters have chosen some less rigorous (although no more interesting) course to meet their science requirements. Students not planning on college have decided not to take *any* science course. Some of those who are in Mr. Jones's class are wondering why they let their parents or academic advisor talk them into taking chemistry, knowing in their hearts that they never will see a periodic chart again if, by some stroke of fortune, they can ever get past Mr. Jones's dreaded final.

Chemistry class is a different story this year at Southwest High School in Fort Worth, Texas. The class was asked to find the most effective, economical, and environmentally safe grass fertilizer for use on the grounds of the 104 Fort Worth schools. Working together, the students prepared a plan, including a proposed timetable and budget, for doing the work. They wrote to the school district's Grounds and Maintenance Department to find out about current fertilizing practices and to local nurseries and fertilizer companies for information about fertilizers. They will interview plant specialists to learn about various types of grasses and their fertilizer requirements. They will study the chemical laws that describe the way that fertilizers work.

Once they have determined the best fertilizer, the students will write the Grounds and Maintenance Department to share their conclusions. They will either congratulate them on their choice of fertilizer or urge a change in the G&M Department's practice.

The Fort Worth students — working together, interviewing professionals in the outside world, and engaging in an interesting and meaningful project — are just as likely to learn the principles of chemistry as those in Mr. Jones's class. They are more likely to remember what they learned, understand how chemistry is used in the real world, and become interested in science as a possible career.

The Fort Worth students will also acquire other skills that will be useful whether they choose careers in science or other fields. They will learn how to:

- budget and schedule — or, more broadly, *allocate resources*;
- work with classmates, experts, and groundskeepers — or develop *interpersonal skills*;
- organize and evaluate data — or *handle information*;
- evaluate alternative technological solutions to the problem of grass-growing — or, more broadly, learn about *technology*.

Finally, the students will also get to understand the *system* that really

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determines which fertilizer the school district will purchase.

Improvement in the chemistry course is one example of broader change that is under way through Fort Worth's C3 Project. C3 — or Community, Corporations, and Classrooms — was launched in 1989 because local businesses and educators felt that schools were not adequately preparing young people for work. The project's first step was an intense, ongoing dialogue between the business community and schools.

One of the early discoveries was the mismatch between the writing skills taught in school and those needed at work. Sally Hampton, a curriculum designer at the Fort Worth Independent School District, found that the writing most often taught in school are essays, book reports, and literary criticism. Working with the business community, Hampton found a wide variety of writing in the workplace — reports, brochures, letters, memos, and instructions — but very little demand for literary criticism. (University educators even said that being good at writing literary criticism isn't all that helpful for most academic disciplines.)

Good business writing informs, clarifies, and persuades, among other things. These writing skills are being acquired in Fort Worth's chemistry classes, as students prepare persuasive proposals for budgets, letters to get information, and manuals to guide future students through the process. Meanwhile, students will leave the hypothetical Mr. Jones's class thinking chemists write only chemical formulas and never a complete sentence.

What Work Requires of Schools

The broad lessons being learned by the students in Fort Worth's chemistry class are those identified by SCANS, the U.S. Department of Labor's Secretary's Commission on Achieving Necessary Skills. For a year, the 31 SCANS Commissioners (representing education, business, labor, and state government) and the SCANS staff and research team talked with employers, managers, and especially with front-line workers in a wide range of U.S. businesses. We talked to them in their stores, offices, government buildings, plants, and manufacturing facilities. We asked employers what kind of skills their employees need, and we asked workers what skills they use in their jobs. What both told us is that good jobs depend on people who can put knowledge to work.

We didn't just talk to experts. We went out and interviewed, for up to three hours each, workers in real work sites. From these interviews, SCANS identified what we call a three-part "foundation" of skills and personal qualities needed for high-performance work:

- *basic skills* — reading, writing, mathematics, speaking, and listening;
- *thinking skills* — creativity, decision making, reasoning, and problem solving;
- *personal qualities* — individual responsibility, self-management, and integrity.

SCANS also identified five "competencies" that must be built upon this foundation. These are the same five competencies taught in the Fort Worth chemistry class. They are the ability to productively use:

- *resources* — allocating time, money, and people;
- *interpersonal skills* — working on teams, teaching, negotiating, and serving customers;
- *information* — acquiring, evaluating, and processing data;
- *technology* — selecting, using, and applying technology;
- *systems* — understanding social, organizational, and technological systems.

As the SCANS report says, "These eight areas represent essential preparation for all students, both those going directly to work and those planning further education."

These foundation skills and competencies are generic or universal. They apply to most jobs. For example, both accountants and engineers manage resources and information and use technology. And the SCANS skills are used, with varying levels of proficiency, at many levels on a career ladder — from the shop floor to the executive suite. Thus, what separates the SCANS report from other education and work force skills reports is that it doesn't blame the schools for what students don't know. Instead the report — entitled *What Work Requires of Schools: A SCANS Report for AMERICA 2000* — outlines what workers will need to know in order to succeed in the economy of the next century.[1]

Schools, of course, do more than simply prepare people to make a living. As our report says, schools "prepare people to live full lives — to participate in their communities, to raise families, and to enjoy the leisure that is the fruit of their labor. A solid education is its own reward." SCANS is focusing on one important part of education: the role schools play in making sure that young people are ready for the work world.

Communities that want to fulfill this role will forge a strong link between their schools and their employers. In too many American communities there is little connection between the two, much to the disservice of both. While most high school teachers are quite familiar with the entrance requirements for college, few know what is needed to succeed at work.

Steffen Palko, a Fort Worth businessman and school board member, created C3 to form the link in his community. With the same goal in mind, the American Broadcasting Company (ABC) is working with economics classes in five Indiana cities. Students there are finding out for themselves if the SCANS skills are required in their communities by interviewing local business people. The SCANS protocol, which requires up to three hours to administer, was reduced to one hour and made suitable for high school students to use. These high school students will report the results of their interviews to the middle schools in their communities. They also videotaped the most interesting interviews for a telecast that was aired throughout Indiana in January.

Employers in the 21st century will expect an education system that can assure that all of its graduates have the skills identified by SCANS. The Los Angeles Unified School District is already moving in this direction. Late in 1991, District Superintendent William Anton moved to guarantee that all graduates of the district will have the SCANS skills by 1994. After that date, adult school district programs will remedy any deficiencies.

What Schools and Students Require of Employers

Partnerships are two-way streets. Where are the employers who are demanding the SCANS skills? Who is creating the work settings in which the students from transformed high schools will find meaningful and well-paid work? Surely, one aim for restructuring schools is reversing the decline in the wages of those whose formal education ended with a high school diploma. Over the last decade, young males with only that much schooling have seen wages, adjusted for inflation, decline by 18 percent. In 1969, four of five black males, aged 25-54 with 12 years of education, earned enough to lift a family of four above the poverty line. By 1986, only 57 percent of black male high school graduates (with no college) could do that well. We don't, after all, want to educate people and then sentence them to boring, low-paying jobs in which they can't put their skills to work.

Internships help teachers learn about the competencies students need. Here, a teacher in the GEMMA program and a mentor from Delco Chassis work on a wave soldering machine.

The wage decline will come to an end when the high-performance standards that characterize today's leading-edge companies also become the standard for the vast majority of U.S. companies, large and small, local and global. In order to compete internationally, many businesses have already reorganized. They have abandoned Frederick Taylor's 80-year-old assembly-line mentality; one that makes little use of employees' talents, relying on them only to perform repetitive, routine tasks. High-performance firms have replaced the Tayloristic approach with one advocated by Edward Deming and practiced by the Japanese auto industry and by American firms — such as Motorola — which have won the esteemed Baldridge award in this country.

These businesses use all of their workers' skills to relentlessly pursue excellence, product quality, and customer satisfaction. They combine technology and people in new ways, moving decisions closer to the front lines, and drawing more fully on the abilities of all workers. The Deming approach means quality built in, not end-of-the-line quality control. And it means treating the work force as an investment — not a cost.

But employers cannot adopt Deming's approach unless they can find workers with the skills needed to implement it. The most disturbing finding of the initial SCANS report is that "more than half of our young people leave school without the knowledge or foundation required to find and hold a good job. These young people will pay a very high price. They face the bleak prospects of dead-end work interrupted only by periods of unemployment." Simply

put, low skills lead to low wages and low productivity.

Unless both schools and employers work together to close the skills gap, we will consign millions of young people to a life of dead-end, low-paying jobs. And we will weaken an American economy that is already struggling to meet the competition from overseas. The twin worlds of school and of work both have to change. Already, a strong back and a willingness to work are not enough to earn a decent living. Nor can firms that cling to the old Taylor-like process survive in the 21st century.

Assessment and Certification

Assessment and certification form a natural bridge between school and work. Many students take it easy because they see little relationship between school and their future employment. They don't understand how what they learn in math and English classes, for instance, relates to the realities of work.

And many students do know that the vast majority of employers rarely look at high school transcripts, as John Bishop of Cornell has documented so well. As American Federation of Teachers President Al Shanker points out, students know that getting straight *A's* probably won't lead to a higher paying or better entry-level job. So why try harder?

Certificates that accurately reflect mastery of the SCANS competencies, if valued by employers, will change the situation. Such certificates would renew the value of the high school diploma. Colleges would use the certificates when they make placement decisions and, equally important, employers would use them in making hiring decisions. As all of us who have sought degrees and licenses can attest, certification motivates student effort by making a real link between learning and earning.

SCANS certificates would enhance the learning process in several ways. They would give a clear target for instruction. They would also provide a real incentive for students to work hard in school because students would know their performance had a real impact on their college and employment prospects. And they would give employers a credible gauge of the abilities of their prospective employees.

But for these certificates to be meaningful, they must be nationally consistent and reliable. In a world where students often go to college or work far from home, and where businesses have operations throughout the country, students must have certificates that will be honored throughout the country.

Standardized pencil-and-paper, multiple-choice tests cannot be the basis for these certificates. After all, such tests can't tell much about how well an individual works in a group. A more sophisticated system needs to be developed along the lines suggested by SCANS Commissioner Lauren Resnick, the Director of the Learning Research and Development Center at the University of Pittsburgh. Resnick describes three broad types of assessment:

- examinations measuring *performance* of specific tasks,
- reviews of *portfolios* of work done over time,
- evaluations of *projects* done individually or in groups.

Certification is the end point of a continuous assessment process. Properly used, assessment does not punish either students or teachers but, rather, identifies problems and calls forth resources for their solution. Successful companies no longer rely on end-of-the-line quality control but, rather, build in quality throughout the manufacturing process. Likewise, schools must rely on building in quality throughout the educational process. Continuous assessment is the key to the learning process. Certification is a mark of achievement.

Implications for Schools

Just as businesses must, so schools must become high-performance organizations. Quality must be built into learning, not tested into instruction. Everyone in the school — from janitor to principal — must commit to providing a quality education to all students — not just the elite few.

Students won't learn the SCANS skills by osmosis, nor will schools meet new standards without fundamental changes in teaching methods and materials. The most effective way to teach skills is in the context of real-life situations and real problems. Students should not be filled with abstract data to be recalled for a test and forgotten, but, rather, they should begin by applying their knowledge. Students in Fort Worth do not need to learn basic chemistry (in Chem 101) before they learn to use chemistry to solve real problems (in Chem 102). The two go together.

The SCANS competencies can and should be woven into every class. Doing so does not require additional courses nor a longer school day nor special courses in systems or technology. Teaching the SCANS skills requires less of a change in what is taught than in *how* it is taught. The important point is that students leave their chemistry or history courses understanding systems and technology.

Pursuit of the SCANS skills will complement other education reform initiatives. The changes will primarily

require the unleashing of teachers' creativity. SCANS' education advisors, including ASCD Executive Director Gordon Cawelti, believe that once teachers know what skills are needed in the workplace, they will be able to teach them.

But new resources will be necessary if the SCANS skills are to be learned by *all* students. Teachers will need time to work together to develop innovative teaching techniques and share ideas. Curriculum developers will need to develop prototypes of kinds of successful approaches and work with teachers as coaches to spur on the creative process. New materials will be needed and new assessment techniques developed. In addition, instructional technology will need to be used more extensively and more creatively than in the past. Recognizing these needs, the Bush administration has called for new academies for teachers and for administrators and, more dramatically, has asked Congress for $535 million to seed 535 "break-the-mold" schools.

As SCANS Chairman former Secretary of Labor William E. Brock says, "By our failure to change how and what our schools teach our young people . . . we have put our country on a downward path toward low skills, low productivity, and low wages. In a very real sense, we are failing our children and shortchanging their future and ours."

[1]To obtain a copy of the report, contact the U.S. Department of Labor at the address below or call 1-800-788-SKILL.

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