

Voluntary Industry Skill Standards— Integrated Standards and Equity

Joyce Malyn-Smith Ed.D. and Vivian Guilfooy MA

Need for National Industry Skill Standards

As America felt the sharp pangs of economic decline in the 70's and 80's, researchers and policy-makers began to rethink our national approach to workforce development and to examine education and employment systems of other countries. The Commission on the Skills of the American Workforce (*America's Choice: High Skills or Low Wages*, 1990) found that countries experiencing economic strength and stability shared a common approach to education and work which included: a) an expectation that all students reach a high education standard; b) a "professionalized" vocational education; c) a comprehensive labor market system combining labor market information, training, job search and income maintenance for the unemployed; d) employer tax supported in-company training; and e) a national consensus on moving towards high productivity work organizations and building high wage economies.

A number of other reports helped begin a process to guide American thinking about the responsibility of the education sector to prepare young people for their futures as fulfilled adults and successful participants in the American economy. *The Forgotten Half* (Grant Foundation) made clear that 50 percent of America's youth who were in the "general track" were graduating without adequate skills to succeed in America's workplaces. *What Work Requires of Schools*, commonly called the *SCANS Report* (Report on the Secretary's Commission on Achieving Necessary Skills, 1991) identified

general "workplace know-how" as five basic competencies and a three-part foundation required by all young people to meet the employment demands of America's workplaces. The five competencies specify how young people should: identify, organize, plan and allocate resources; work with others; acquire and use information; understand complex inter-relationships of systems; and work with a variety of technologies. The three-part foundation includes basic skills, thinking skills, and personal qualities.

Congress propelled the issues forward by enacting the "Goals 2000: Educate America Act," which set a national agenda for reform and called for establishing a National Skills Standards Board. The Board would be charged with developing and implementing a national system of voluntary industry skill standards and certification. This parallels the federal initiative to establish national standards in math, science, language arts, and the social sciences.

National Voluntary Skill Standards: What are They?

In anticipation of the work of the National Skill Standards Board, the federal Departments of Education and Labor funded 22 National Voluntary Industry Skill Standards Projects in 1993 and 1994. The industry groups are diverse, ranging from Bioscience and Chemical Processing to Electronics and Human Services. In the first phase, each project identifies what entry-level workers need to know and be able to do to succeed in that industry.

The very term "skill standards" however, can conjure up negative images. For example, standards are often seen as a device to "screen people out" of opportunities, classrooms, or workplaces. Some see them as narrowly defined, practical, hands-on skills, for someone else's children—those who don't possess intellectual or academic abilities. Neither view is correct.

Skill Standards— if designed and used appropriately— are valuable guideposts and benchmarks. They become "output criteria" for employers as they upgrade skills of current workers, recruit new workers, and evaluate effectiveness of training. They provide structure and content for educators as they design programs and develop curriculum to encourage student achievement. They serve as a map for educators and

employers as they cooperate to build effective school-to-work systems. They paint a picture for career counselors, teachers, and parents as they introduce students to the world of work. And, they offer a set of challenges for students as they begin to explore career options and prepare for their futures.

The very best skill standards will:

- engage stakeholders from industry, education, and the community in the design and validation process—developing a common language and respect for the contributions of each sector
- encourage restructuring of learning—because they focus on student mastery of both technical and academic skills through problem-solving
- create a framework for implementing alternative assessment strategies such as portfolios, products produced, oral reports, and research projects— to measure the new demands of high performance workplaces
- serve as a guide for the professional development of workplace mentors, teachers, and workplace supervisors— all of whom will be engaged in helping learners succeed.
- promote flexibility about where learning takes place—drawing on the very best mix of workplaces, community settings, and schools
- hold everyone accountable to a higher level of student achievement for all students— promoting effective teaching and learning strategies such as cooperative and team learning and appropriate use of new technologies

Features of the Integrated Industry Skill Standards Model

EDC has developed an Integrated Industry Skill Standards (IISS) Model that draws on the best learning from education and workplace reform. The entire process and the results for the Bioscience Industry are about to be published. Two elements that have important implications for equity are the concept of a *Training Occupation* and the *IISS* itself.

The concept of a *training occupation* is commonly used in European countries to train youth apprentices. It is a fictitious construct that does not exist in the work place, but is a real outcome goal for education and training. It combines all of the knowledge, skills and attributes required to perform the full range of tasks conducted by a group of related real life occupations. By preparing for a training occupation, a person will be more extensively qualified for work in a number of different but related jobs within an industry. That person will be positioned to move into a variety of career paths. Such a cross-trained worker is more productive in a workplace where teamwork is required, or where job rotation occurs. A person prepared for a training occupation also is better able to adapt to new technologies or work systems, or to new jobs in restructured work organizations.

For example, the training occupation for the Bioscience Industry is defined as follows: The Bioscience Technical Specialist I performs experiments and assays, manufactures products, or assists with research, using a variety of technical skills under supervision. Nineteen entry level laboratory-based jobs which share a common base of skills and knowledge requirements comprise this training occupation. Some of these include: Animal Technician, Assay Analyst, Clinical/Medical Lab Technician, Cyto-prep Technician, Manufacturing Operator, Pilot Plant Operator, and Research Technician. The training occupation crosses the sectors of biotechnology, pharmaceuticals and clinical laboratories.

The *IISS* consists of a structured "scenario" which represents a typical, real-life work problem; the skills,

tasks, knowledge, and attitudes embedded within that problem; and the criteria for successful mastery of those work tasks.

One of the Integrated Skill Standards for Bioscience includes the following problem:

One part of your laboratory responsibilities is to safely unpack and process biological samples. Demonstrate everything you would do to accomplish this. While unpacking samples one morning, you notice that one of the samples is leaking from the container. According to regulations, what should you do?

This problem challenges the learner to think and act. Tasks include: a) take and document corrective action according to SOP or as directed; b) notify appropriate person about problems and observations; c) document communication of information; and d) maintain professional demeanor. Some of the industry related skills to be demonstrated include aseptic technique, basic laboratory procedures, recognition of environmental hazards, stress management and troubleshooting.

By focusing on the problem scenario, individuals are required to rise from demonstrating mastery of isolated tasks to demonstrating mastery within the context of a real workplace problem. This larger definition of "standard" allows for individuals with varying approaches to problem solving and task mastery to "work through to the solution" and increases the chances that they will succeed in education, training and workplaces. The scenarios are constructed deliberately to offer more than one "right way" to master a task and get the work done well.

Integrated Industry Skill Standards: Promoting Equity, Achievement & Choice

The IISS model sets forth the high and real demands of industry. It also builds on the strength of diversity by *promoting* alternative ways of learning— including the kinds of learning that research tells us holds promise for girls

and students of color. The IISS model supports equity and excellence because it:

- *reflects the reality of the workplace.* Front line workers— women and men of diverse backgrounds— are involved actively in constructing the standards. Shoulder to shoulder with peers across all sectors of the industry, workers convey their excitement and pride as they identify the building blocks of the standards. In this process, they also share priority issues, difficulties, and the day-to-day concerns they face in carrying out their work. After scenarios are completed, workers validate the standards against which they are measured. Young women will have a new window on the world— to understand " what it's like" to work in promising industries that offer good income and career opportunities.
- *sets clear, high expectations.* Everyone agrees that having high expectations for all students, and particularly for women in math and science-related occupations is a critical variable in student success. But what does that mean? The IISS standards provide a clear set of expectations that are visible, concrete, and recognized by industries— something that everyone can see and understand. The IISS model offers a much more inviting way for girls and women to " see" what is expected and to relate that to their own interests and talents. It also helps " gatekeepers" to learn about the industry and what it requires. Often, counselors, teachers, and parents are not aware of the kinds of the unique problems being solved in various industries or of the common problems that show up across industries. As a result they often " persuade" girls and women to think narrowly about career choices— with the net effect of lowering student expectations, and limiting student participation in important courses such as algebra and science.
- *increases options.* Providing young people with a broad set of industry skills that demand both academic and applied learning will enable them to move directly to

work settings, to higher education and training programs, and/or across industry sectors. This opens up futures, especially for girls and minorities who are often tracked into programs that restrict opportunities for succeeding in higher level mathematics and science or for acquiring the necessary background for college entry— especially in demanding technical courses and careers. As a result, girls and people of color are “ left out” or spend endless time “ catching up.” Drawing the integrated standards back into the high school curriculum allows students to participate in any industry cluster and be fully prepared to take full advantage of the wide array of options and choices available in our highly technical workplaces and in higher education.

- *encourages new teaching and learning strategies.* The integrated standards recognize and accommodate diverse learning styles and multiple intelligences, often untapped by teachers. They encourage students to pursue alternative ways to pose and solve problems, display their talents, use their own special ways of thinking, and demonstrate competency— individually and in teams. It draws on the research that tells us how to involve girls effectively in the classroom and build on their strengths. As a result, the model also influences teachers to learn new pedagogies and broaden their own repertoire of teaching styles.
- *provides rich content, context and meaning.* The standards are context-rich. The scenarios reveal the “ energy” of the workplaces, the discovery process, and how people must keep learning at the workplace to hone their skills and respond to changing environments. Students can “ find” themselves in these real situations. The development of challenging math, science, social studies and communication skills embedded in the scenarios give all students a solid grounding in both technology and liberal arts. Giving girls an opportunity to find their own meaning in this rich landscape— rather than mastering isolated tasks— will provide a more balanced environment in which they can thrive and succeed.

- *develops high-performance workplace skills.* Everyone is trying to move toward the concept of high performance workplaces where continuous quality improvement and flexibility are key values and the employee is considered the most valuable asset. Essential elements of the IISS model are teaming, problem-based learning, constructivist learning, contextual learning, higher-order thinking and cooperative learning. Coincidentally, these are the very "ways of learning" that come more easily to girls and women- and are often missing from many classrooms and workplaces.
- *invites alternative assessments.* Standardized tests are only one way of measuring progress. The IISS model demands that we rethink how and when students can demonstrate what they know and what they can do. These include written and oral reports, technical papers, projects, presentations and portfolios, computer simulations, panel reviews by employers and educators, and continuous evaluation and feedback loops. The IISS model invites students to present their accomplishments and meet standards in a variety of ways. If the standard is mutually acceptable and acknowledged by teachers, industry, labor, and higher education gatekeepers, there will be fewer surprises when girls and women apply for jobs or college entrance. The work they have done will be valid and portable.

Integrated Industry Skill Standards provide a unique opportunity to frame education and training programs in new ways, not only to create a high skilled technical workforce, but to ensure that equity and diversity are not lost in the economic reform agenda.

National Skill Standards Projects

| <i>Industry</i> | <i>Contact</i> | <i>Name</i> |
|---|--|---|
| Advanced Manufacturing | C.J. Shroll Sally O'Dowd 202-662-8965 | FIM 1331 Pennsylvania Avenue, NW Ste. 1081, North Tower Washington, DC 20004-1703 |
| Agricultural Biotechnology | Bernard L. Staller 703-360-3600 | National FFA Foundation P.O. Box 15160 Alexandria, VA 22309-0160 |
| Air-Conditioning, Heating and Refrigeration | Victor Harville 800-248-7701 | Southern Association of Colleges and Schools 1866 Southern Lane Decatur, GA 30033 |
| Automobile, Autobody, and Truck Technician | Patricia Lundquist 703-713-0100 | National Automotive Technicians Education Foundation 13505 Dulles Technology Drive Herndon, VA 22071-3415 |
| Bioscience | Judith Leff Monika Aring 617-969-7100 | Education Development Center 55 Chapel Street Newton, MA 02160 |
| Chemical Process | Kenneth Chapman 202-872-8734 | American Chemical Society 1155 16th Street, NW Washington, DC 20036 |
| Computer Aided Drafting and Design | John Morrison/ Jane Beardsworth 202-637-3426 | FIM 1331 Pennsylvania Avenue, NW Ste. 1410, North Tower Washington, DC 20004-1703 |
| Electrical Construction | Charles Kelly 301-657-3110 | National Electrical Contractors 3 Bethesda Metro Center, Ste. 1100 Bethesda, MD 20814-5372 |
| Electronics | Irwin Kaplan 202-955-5817 | Electronics Industries Foundation 919 18th Street, NW Washington, DC 20006 |
| Electronics (DOL) | Cheryl Fields Tyler 408-987-4267 | American Electronics Association 5201 Great American Pkwy Santa Clara, CA 95054 |
| Grocery | Jim Williams 703-437-5300 | Grocers Research and Education Foundation 1825 Samuel Morse Drive Reston, VA 22090 |
| Hazardous Materials Management | Jim Johnson 817-772-8756 | Center for Occupational R&D (CORD) 601 Lake Air Drive Waco, TX 76710 |
| Health Care | Sri Ananda 415-241-2725 | Far West Lab for Educational R&D 730 Harrison Street San Francisco, CA 94107-1242 |
| Heavy Highway/Utility Construction | John Tippie/ | Laborers-AGC Education & Training Fund |

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| and Environmental Remediation and Demolition | James Warren 203-974-0800 | 37 Deerfield Rd, Box 37 Pomfret Center, CT 06259 |
| Hospitality and Tourism | Doug Adair Sally Conway 202- | Council on Hotel, Restaurant and Institutional Education 1200 17th Street, NW Washington, DC 20036-3097 |
| Human Services | Virginia Mulkern Marianne Taylor 617-876-0426 | Human Services Research Institute 2336 Massachusetts Avenue Cambridge, MA 02140 |
| Industrial Laundry | Geoffrey Northey 202-296-6744 | Uniform and Textile Service Assoc. 1730 M Street, NW, Ste. 610 Washington, DC 20036 |
| Metal Working | William Ruxton 301-248-6200 | National Tool & Machining Assoc. 9300 Livingston Road Ft. Washington, MD 20744 |
| Photonics | Darrell Hull 817-772-8756 | Center for Occupational R&D (CORD) 601 Lake Air Drive Waco, TX 76710 |
| Printing | Jack Simich 412-621-6941 | Graphic Arts Technical Education 4615 Forbes Avenue Pittsburgh, PA 15213 |
| Retail Trade | Robert Hall 202-783-7971 | National Retail Federation 325 7th Street, NW, Ste. 1000 Washington, DC 20000 |
| Welding | Nelson Wall Charles Fassinger 305-443-9353 | American Welding Society 550 NW LeJeune Road Miami, FL 33126 |