Overview of Skill Standards
Using Skill Standards for
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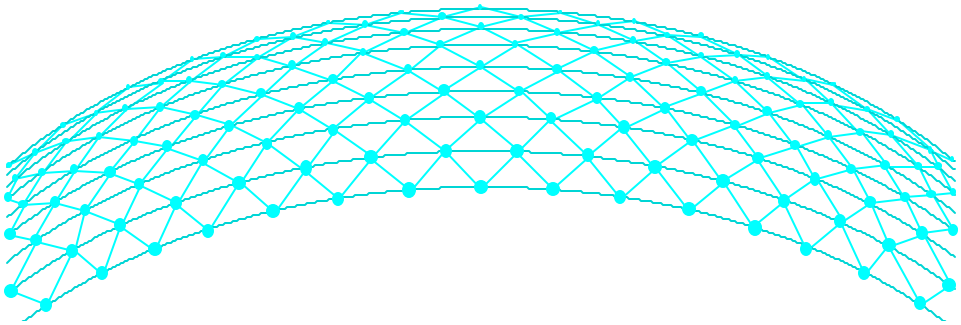

Guidebook Volume II

PERFORMANCE ASSESSMENT and CURRICULUM DEVELOPMENT

Prepared and Updated by—
The Boeing Company
Center for Learning Connections
Washington State Board for Community and Technical Colleges

December, 1999

Guidebook Volume II

PERFORMANCE ASSESSMENT and CURRICULUM DEVELOPMENT

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—Introduction

This project was made possible through the Federal School-to-Work Opportunities Act (CFDA 17.249) administered by the State Board for Community and Technical Colleges.

Guidebook Volume II—*PERFORMANCE ASSESSMENT and CURRICULUM DEVELOPMENT* is a stand-alone complement to previously published and updated **Guidebook Volume I — *SKILL STANDARDS***, which contained a combination of background readings, models of skill standards, preferred development process, definition of terms, validation information, and resource lists.

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Guidebook Volume II
PERFORMANCE *ASSESSMENT* *and CURRICULUM DEVELOPMENT*

Section I

Overview of Skill Standards

—What are Skill Standards?

Skill standards are performance specifications that identify the knowledge, skills and abilities an individual needs to succeed in the workplace. They are critical to improving the skills of employees, raising standards of living and improving the competitiveness of the U.S. economy. Skill standards provide a common vocabulary to enhance communication between:

- ***Employers and Employees or Job Seekers***—by specifying the knowledge, basic skills, technical skills, aptitudes and attitudes required for recruitment, hiring, education and training, promotion and retention in a company or within an industry.

- ***Employers and Schools or Job Training Programs***—by encouraging the alignment of school curricula with industry requirements, by updating educational objectives as workplace demands change, and by ensuring a better return on public and private education and training investments.

- ***Employees or Job Seekers and Schools or Job Training Programs***—by helping employees and job seekers make sound decisions about their own education and training needs in a changing marketplace.

Skill standards answer two critical questions: "What do workers need to know and be able to do to succeed in today's workplace?" and "How do we know when workers are performing well?" Without this fundamental information, employers do not know whom to hire or where to focus their limited training dollars; employees and new entrants to the workforce do not know what they need to do to improve their performance; and educators do not know how to prepare students for the challenges of the workplace.

—Why Do Skill Standards Matter?

In most successful workplaces the only constant is change. Jobs that once were relatively simple now require high performance work processes and enhanced skills. Because skill standards reflect changing workplace realities, they help applicants and employees enjoy greater career opportunities and achieve higher standards of living and economic security.

Updating skills and knowledge is now a lifelong endeavor, causing many employers and employees to spend more effort, time and money on education and training. Skill standards provide benchmarks for making education and training decisions, shaping curricula, and directing funds toward highest value education and training investments.

Skill standards will help employers:

- Boost quality, productivity, time-to-market, innovation, and competitiveness
- Obtain a better return on their training investment
- Gain access to the industry's best bench-marking data, skills analysis tools, and training strategies
- Reduce costs of remedial training, skill assessment, and verification
- Improve employee retention by giving workers a clearer picture of what is expected of them
- Develop a more flexible workforce
- Improve hiring practices and draw from an increased pool of skilled workers

Skill Standards will help workers:

- Understand what they need to know to succeed in their careers
- Communicate more effectively to current and future employers what they know and can do
- Make better training decisions—not just for their next job but for the rest of their careers
- Move more easily between work roles, helping to ensure their long-term employability
- Know how to spend limited training time and money
- Achieve higher levels of performance and contribute to their company's success

Skill standards will help educators and trainers:

- Gain a greater under-standing of the skills workers need
- Develop appropriate curriculum and programs
- Understand the work readiness skills that high school and college graduates need for employment in high-skill, high-wage jobs
- Speak a "common language" with industry about education needs
- Strengthen their relationships with local businesses and labor unions
- Provide students with realistic career advice
- Update courses to meet changing needs

What Is the National Skill Standards Board?

—The National Skill Standards Board

The National Skill Standards Board, established in 1994, is chaired by James R. Houghton, retired CEO, Corning Incorporated; and is composed of 28 members representing business, labor, education, government, consumers, and civil rights organizations. Created by Congress, the Board's charge is to:

- Identify broad clusters in which skill standards will be developed.
- Promote the establishment of voluntary partnerships to develop skill standards.
- Research, coordinate, and disseminate information on the development of skill standards.
- Endorse skill standards that are created by voluntary partnerships.
- Develop a national framework to support skill standards.

What Is Its Purpose and Function?

—Mission Statement of the National Skill Standards Board

The mission of the National Skill Standards Board is to encourage the creation and adoption of a national system of skill standards that will enhance the ability of the United States to compete effectively in a global economy. These voluntary skill standards will be developed by industry in full partnership with education, labor and community stakeholders, and will be flexible, portable and continuously updated and improved.

This national skill standards system is intended to do the following:

- Promote the growth of high performance work organizations in the private and public sectors that operate on the basis of productivity, quality and innovation, and in the private sector, profitability.
- Raise the standard of living and economic security of American workers by improving access to high skill, high wage employment and career opportunities for those currently in, entering, or re-entering the workforce.
- Encourage the use of world-class academic, occupational and employability standards to guide continuous education and training for current and future workers.

—What Principles Guide Skill Standards Work?

- The skill standards must be voluntary. The system will only work if the final product is relevant to employers, unions, educators and employees.

- The process is typically business-led in full partnership with education, labor and community stakeholders.

- The skill standards must be flexible, portable and continuously updated and have equal relevance to both the public and private sector.

- The skill standards work needs to be integrated with relevant, cutting edge work already being done by employers, states, unions and the education systems.

- Skill standards must be dynamic and geared toward the future with an emphasis on the process of continuous improvement.

- The standards must be consistent with existing civil rights laws and practices.

- Industry, labor and education must work together to ensure that work-related education prepares people for requirements of real-life work.

- Experienced workers are the experts in their jobs and can identify the work performed in their occupations and required skills, knowledge, and abilities.

- Workers should be prepared for a broadly defined occupation, which encompasses skills and knowledge needed for a number of related occupations throughout the industry. This opens up a broad range of work opportunities and makes people more adaptable for various jobs in an organization.

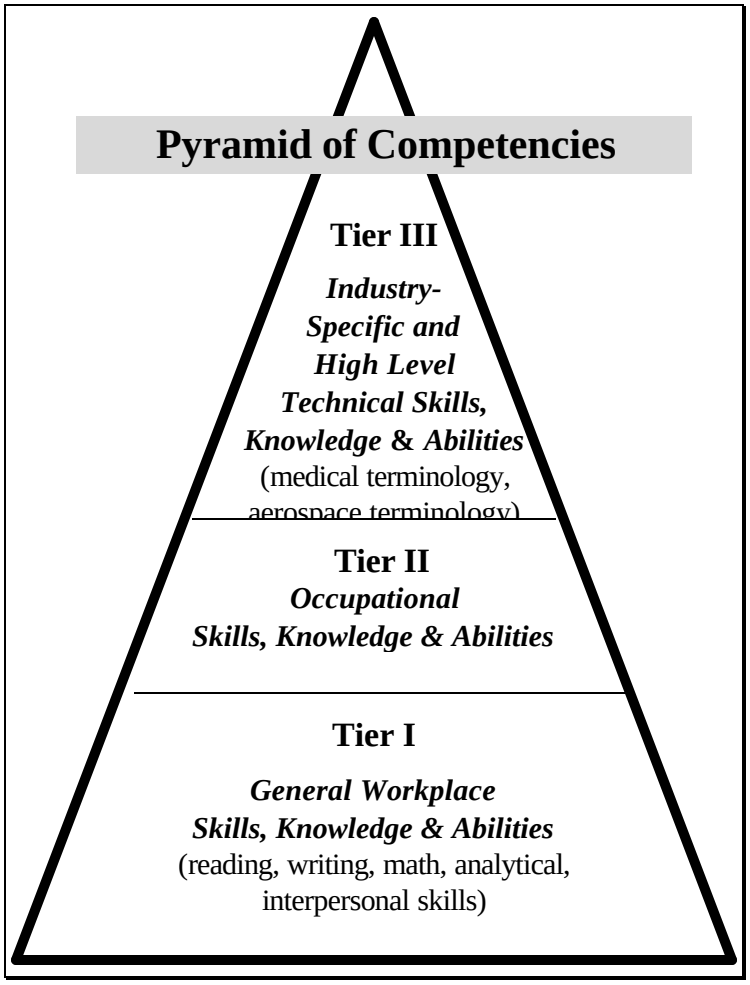
- Integrated skill standards, rather than compartmentalized skill standards, are needed to prepare for real-life work. Integrated skill standards place duties and tasks, and the know-how needed to perform them, in the context of real-work scenarios which require decision-making and problem solving.

- Skill standards include critical work functions and tasks; academic skills and knowledge, foundational or employability skills and occupational or technical skills and knowledge. They must include clear performance criteria related to successful on-the-job performance.

—What Conceptual Frameworks Exist?

A Three-Tier Skill Standards System

Imagine that the United States develops a comprehensive qualifications system with three levels or tiers.



At the top of this qualifications system, call it Tier III, are standards for individual jobs—jobs like that of a welder of specialty alloys, or dental assistant, or the operator of a machine that performs lithographic functions in the semiconductor fabrication business. The standards are set by individual firms for the way work is to be done in that firm—for example, the standards Boeing sets for the tolerances and failure rates in the construction of its new 777 airplanes.

At the next level of the qualifications system, Tier II, are skill standards for clusters of occupations requiring broadly similar skills. Because each of these groupings include many occupations—there might be a grouping, say, for manufacturing specialists, encompassing a great variety of types of manufacturing jobs—there might eventually be no more than thirty of these categories covering most of the front-line jobs in the nation. The actual standards for what one would have to know and be able to do in each category and how well one would have to be able to do it are defined by the requirements of high performance work-organizations, in which one is expected to think and to contribute a lot to the value and improvement of the product or service.

The third level, Tier I, encompasses a set of standards for what everyone in the society ought to know and be able to do to be successful at work, as a citizen, and as a family member. This tier incorporates standards calling for deep understanding of the core subjects in the curriculum as well as the capacity to apply that knowledge to complex real-world problems. And it incorporates the generic skills required to succeed in high-performance work environments, regardless of the particular job one is doing—skills such as problem-solving ability, the capacity to learn quickly, and the ability to work well with others in groups.

Adapted from *"Skill Standards, Qualifications Systems, and the American Workforce."* Marc S. Tucker. 1996.

—What Work Has Been Done?

Although the term 'Skill Standards' is relatively new, many states and local communities have established craft or technical committees related to their vocational education program development to identify skills needed by workers in their industries.

In tandem with establishing the 22 demonstration projects, the federal government through the Department of Education, took the lead in funding a baseline study of how skill standards are developed and used in the United States. The study, conducted by the Institute for Education Leadership (IEL), found a great deal of effort underway and serious gaps in current practice.

—Current Practices

Skill standards covering a wide range of occupations have been extensively used in this country since before the turn of the century. Skilled trades, medicine, law, social work, and real estate areas are but a few of the occupational areas that have established collective, but self-imposed, criteria for recognizing workers as capable of practicing their chosen crafts.

In the U.S. most occupational credentials are awarded by non-public organizations. Even in this country, however, government has become more involved in oversight of many occupations through state and federal licensure requirements, resulting in a complex web of relationships between licensing and voluntary credentialing systems.

Two distinct communities of interest—industry and education—have created and sustained skill standards activity.

Approximately 400 professional societies and industry-based associations are involved in the promotion and issuance of some form of skills-based credential. Approximately 150 of these organizations focus on occupations that do not require at least a bachelor's degree to earn the credential. Credentialing activities can include: prescribing education and experience qualifications for certification candidates; establishing for potential accredited institutions qualifications for curriculum, faculty, and facilities; administering competitive exams; and conducting assessment visits.

The IEL study found that approximately 700 committees using industry volunteers exist across the country to assist state educators and business associations in develop skill standards. Despite these extensive efforts, no one set of skill standards has been established for all states or is used by every state. Only 26 to 32 states use a common set of standards for any one occupation.

The IEL study identified common patterns in the certification systems.

- No programs offer a career path from novice through masters' level in broad occupational areas;
- In almost all programs, eligibility for certification is linked to time in a job/industry;
- Education is credited against time spent in the workplace to qualify for eligibility or certification;
- The great majority of programs assess through paper-and-pencil tests;
- Most programs have some form of required re-certification; and
- Most programs have developed a core body of knowledge that a candidate must have in order to qualify for consideration.

The Ideal Skill Standards System

According to the IEL baseline study, the ideal skill standards system would center around the needs of individuals and employers and would incorporate the following characteristics:

- It would be widely accessible to students and workers regardless of age;
- It would respond to changes and differences in local and individual needs through flexibility in education and training provided (e.g., types of institutions, full-time versus part-time);
- It would be able to meet the needs of individuals regardless of the types of education and training they are pursuing (e.g., initial preparation, continuing, upgrading, or remedial);
- It would allow career paths within and between industries;
- It would be explicit, so that firms, educators, training providers, and individuals know what the standards are and where information about them can be obtained;
- It would be competency-based;
- It would formally assess and certify that an individual's skills have been documented by a third party;

- It would be progressive, so that people can build upon blocks of competencies and adapt to technological, organizational and market changes to improve their prospects or to explore their potential;

- It would have a common framework and use common language when describing skill levels across industries and occupations, so that both individuals and employers can easily understand workplace expectations. The framework should progress from initial (entry) qualifications through several levels to mastery and/or specialization recognition (IEL, 1993, Vol. I).

—Skill Standards Projects and Contacts

Federal Skill Standards Projects

Industry	Funded By	Grantee
Advanced Manufacturing	Dept. of Ed. 8/93	**Foundation for Industrial Modernization**, 1331 Pennsylvania Ave. N.W., Suite 1500, North Tower, Washington, DC 20004. (202) 662-8970—Contact—Sally O'Dowd.
Agriscience and Biotechnology	Dept. of Ed 10/92	**National FFA Foundation**, 5632 Mt. Vernon Highway, Box 15160, Alexandria, VA 22309. (703) 360-3600—Contact—Jeff Moss.
Air Conditioning, Refrigeration and Power	Dept. of Ed. 10/92	**Southern Association of Colleges and Schools, VTECS**, 1866 Southern Lane, Decatur, GA 30033. (800) 248-7701—Contact—Victor Harville.
Automotive, Auto Body, and Truck Technologies	Dept. of Ed. 10/92	**Vocational Automotive Technical Education Foundation,** 13505 Dulles Technology Drive, Herndon, VA 22071. (703) 713-3800—Contact—Pat Lundquist.
Biotechnical Sciences	Dept. of Ed. 10/92	**Education Development Center,** 55 Chapel St., Newton, MA 92160. (617) 969-7100—Contact—Judith Leff.
Chemical Process Industries	Dept. of Ed. 8/93	**American Chemical Society/EDC,** 1155 16th St., N.W., Washington, DC 20036. (202) 872-8734—Contact—Kenneth Chapman.
Computer-Aided Drafting (CAD) and Design	Dept. of Ed. 10/92	**Foundation for Industrial Modernization,** 1331 Pennsylvania Ave. N.W., Suite 1500, North Tower, Washington, DC 20004. (202) 662-8970—Contact—Jane Beardsworth.
Electrical Construction	Dept. of Labor 12/92	**National Electrical Contractors,** 3 Bethesda Metro Center, Bethesda, MD. (301) 657-3110—Contact—Charles Kelly.
Electronics	Dept. of Labor 12/92	**American Electronics Association,** 5201 Great America Parkway, Santa Clara, CA. (408) 987-4200—Contact—Cheryl Fields Tyler.
Electronics (Consumer)	Dept. of Ed. 10/92	**Electronics Industries Association,** 919 18th St. N.W., Washington, DC 20006. (202) 955-5814—Contact—Irv Kaplan.
Food Marketing Industry (Supermarket)	Dept. of Ed. 8/93	**National Grocers Association,** 1825 Samuel Morse Drive, Reston, VA 22090. (703) 437-5300—Contact—James Williams.

Federal Skill Standards Projects (cont'd)

Industry	Funded By	Grantee
Hazardous Materials Management Technician	Dept. of Ed. 8/93	**CORD**, 601C Lake Air Drive, P.O. Box 21689, Waco, TX 76710. (817) 772-8756—Contact—Dan Hull.
Health Sciences and Technology	Dept. of Ed 10/92	**Far West Laboratory**, 730 Harrison St., San Francisco, CA 94107. (415) 565-3070—Contact—Sri Ananda.
Heavy Highway/Utility Construction	Dept. of Ed. 8/93	**Laborers-AGC Ed. & Training Fund**, 37 Deerfield Road, P.O. Box 37, Pomfret Center, CT 06259. (203) 974-0800—Contact—James Warren.
Human Service Occupations	Dept. of Ed. 8/93	**Human Services Research Institute/EDC,** 2336 Massachusetts Ave., Cambridge, MA 02140. (617) 876-0426—Contact—Valerie Bradley.
Metalworking	Dept. of Labor 12/92	**National Tool and Machining Association,** 9300 Livingston Road, Ft. Washington, MD 20744. (301) 248-6200—Contact—William Ruxton.
Photonics Technician	Dept. of Ed. 8/93	**CORD,** 601C Lake Air Drive, P.O. Box 21689, Waco, TX 76710. (817) 772-8756—Contact—Dan Hull.
Printing	Dept. of Ed. 10/92	**The Graphic Arts Technical Foundation,** 4615 Forbes Ave., Pittsburgh, PA 15213. (412) 621-6941—Contact—John Burgess.
Retail Trade	Dept. of Labor 12/92	**National Retail Federation,** Washington, DC 20004. (202) 783-7971—Contact—Robert Hall.
Tourism, Travel, and Hospitality	Dept. of Labor 12/92	**Council on Hotel, Restaurant, and Institutional Education,** 1200 17th St., N.W., Washington, DC 20036. (202) 331-5990—Contact—Doug Adair.
Uniform Services and Textiles	Dept. of Ed. 12/92	**Uniform Services and Textiles Association,** 1730 M St., N.W., Washington, DC 20036. (202) 296-6744—Contact—Geoffrey Northey.
Welding Occupations	Dept. of Ed. 8/93	**American Welding Society,** 550 N.W. Lejeune Road, Miami, FL 33126. (305) 443-0353—Contact—Nelson Wall.

Skill Standards in Washington State

A background report from the State Board for Community and Technical Colleges *January 31, 2000*

Overview

One of the most important goals of Washington's community and technical colleges is to provide high quality education and job training programs that meet the needs of students and employers. Successful programs help students learn the basics--reading, writing, math and general problem solving--as well as the technical skills needed in specific careers. Meeting the needs of industry ensures that students and current employees are well-prepared to meet the challenges of a changing workplace.

A number of innovative partnerships involving industry groups and leaders from the two-year colleges, K-12 schools and four-year universities have formed to develop industry-defined "skill standards." Skill standards provide an effective way to connect education with industry's needs and ensure that students and current employees learn up-to-date skills through education and training programs that are designed to help make them productive and employable.

What Are Skill Standards?

Simply put, skill standards are the industry-defined skills, knowledge and abilities required for individuals to succeed in the workplace. They specify what students, job seekers and current employees must know and be able to do within a particular industry and occupation, and the required levels of performance.

The community and technical college system is leading the skill standards development efforts in Washington State. In 1994 they adopted a three-step process that local colleges can use to ensure that the standards they create will be applied throughout the state: (1) compiling the existing skill requirements developed by industry associations, employers, and labor unions; (2) convening focus groups of employers and workers to determine which skills are relevant to the state labor market; and (3) validating the work of these groups through representative samples of the industry statewide. Once skill standards are developed for an occupation, an advisory committee of business, labor and education partners collaborate to develop assessment tools to measure students' and employees' skill levels, and to work with faculty to create curricula designed to teach the skills. The Boeing Company, the Microsoft Corporation, the Washington State Labor Council, the International Association of Machinists, AFL-CIO, the Washington Electronics Association, the Washington Software Association, the Washington Retail Association, the Northwest Food Processors Association, and many other business, labor and industry partners are participating in these efforts.

Building a Foundation

Significant investments have been made to establish and expand the development of skill standards and standards-based applications for use by industry, education and government. Funding through the Federal School-to-Work and Perkins Acts (including Tech Prep) and investments of state funds through the community and technical college system have resulted in the following:

- Nearly 22 different skill standards projects have been completed, covering a range of high-skill, high-demand and emerging industries and more than 50 occupations (see attached). Standards developed nationally, by other states and professional/trade associations (i.e. National Skill Standards Board, American Electronics Association,) are being adopted to expand the number of industry standards available to accelerate the development of standards-based applications.
- A number of these projects are now designing skill standards-based performance assessments and curriculum models and tools that can be adopted by programs in K-12 and post-secondary institutions, state and local government agencies, and industry.

- Fifteen of the state's 22 Tech Prep consortia are developing and implementing skill standards-based performance assessments, curriculum tools and professional development activities to enhance industry connectivity and facilitate articulation between secondary and post-secondary vocational programs (see attached).
- The state's School-to-Work Transition local partnerships are beginning to use skill standards as the basis for performance assessments, program and curriculum applications and revisions, and teacher/staff development activities.

Benefits to Employers, Educators, Students and Workers

Because skill standards are industry-defined, they serve to clearly communicate employers' expectations to educators, students, parents, job seekers and current employees. Many large and small companies (including Microsoft, Boeing and their suppliers) are now using skill standards for hiring, performance assessments and retraining.

The state's community and technical college system is leading skill standards project development with the goal of enabling all colleges to use skill standards to certify their vocational and job training programs. Since skill standards identify both the basic academic and work-related skills (i.e. SCANS) required by an industry, they are being used by K-12 and post-secondary educators to develop new curriculum, instructional strategies, and for career guidance and counseling. Many educators are beginning to use skill standards to design performance assessments and update curriculum.

For students, job seekers and incumbent workers, skill standards clarify what knowledge, skills and abilities are required for entry into specific occupations. Skill standards help students understand the relevance of academic subjects and work-based learning experiences to their education and career goals, facilitating their transition from high school to post-secondary education, training and employment. For current workers, skill standards clarify the skill requirements, job ladders and training needed to move up within an industry or occupation, building upon an individual's existing skills and knowledge and encouraging continuous learning.

System-wide Applications

Skill standards are portable--once established they can be applied across the state's workforce development system, including:

<u>Education (K-12, Post-Secondary, Adult Basic Education)</u>

- Design new education and training programs, performance-based assessments, integrated curriculum
- Improve system articulation and transitions: K-12, colleges, job training, employment
- Enhance professional development (i.e., industry experiences for educators)
- Establish benchmarks for program quality and accountability

State/Local Government (One Stop, Economic Development, Workfirst, CBOs)

- Enhance labor market information/career planning tools
- Facilitate intake/needs assessments and job matching
- Improve referrals for job training, education and special services
- Develop customized job training and worker retraining programs
- Design staff development programs

Industry (Business, Labor, Industry/Trade and Professional Associations)

- Clarify skill requirements, job ladders and career opportunities for students, job seekers and current employees
- Articulate basic and occupation-specific skill needs to education, training and service providers
- Enhance recruitment, retention and performance assessment
- Improve industry-sponsored training and apprenticeship

Next Steps: Getting to Scale

Skill standards provide an effective strategy for integrating and aligning core elements of the state's workforce development system and assuring that state and local programs and services are responsive to the needs of industry, students, job seekers and current workers. Getting to scale with skill standards will require expanded participation and investments by stakeholders to accelerate current efforts and to initiate additional work in several areas:

- Increasing the total number of state-endorsed skill standards, emphasizing high-wage, high-demand industries, occupational clusters and career ladders
- Supporting development of standards-based applications for employers, state education, workforce and employment agencies
- Developing a certification model for issuing portable, industry-endorsed skill certificates
- Designing a standards/applications updating process to stay current with industry needs
- Providing training and technical assistance to facilitate implementation

SBCTC Contact: Alan Hardcastle, Policy Associate
Workforce Education
(360) 586-2513
ahardcastle@sbctc.ctc.edu

TECH PREP SKILL STANDARDS PROJECTS

State Board for Community & Technical Colleges

CONSORTIUM	COORDINATOR PHONE/FAX/E-MAIL	SKILL STANDARDS PROJECT	EMPHASIS	DESCRIPTION
Northeast TP Consortium ***Bellevue Community College***	Susan Quattrociocchi Phone: (425) 649-3148 Fax: (425) 603-4135 sussanq@aol.com	Information Technology Gateway	Assessment/Curriculum Professional Development	Prepare instructors, launch, beta test, and evaluate developed Skill Standards curricula. See IT.
Basin TP Consortium ***Big Bend Community College***	Mary Shannon Phone: (509) 762-6212 Fax: (509) 762-6355 marys@bbcc.ctc.edu	Maintenance Mechanic • Food Processors • Other Manufacturing Firms	Assessment/Curriculum	Maintenance Mechanics Technology and Industrial Electrical Technology programs targeted to serve training needs of local food processors and other manufacturing firms.
Lewis/South Thurston TP Consortium ***Centralia College***	Theresa Harrison-Kimball Phone: (360) 736-9391 x 404 Fax: (360) 330-7501 tharrison-corey@centralia.ctc.edu	CAD Early Childhood Ed. Business Ed. Natural Resources & Forest Technology	Assessment/Curriculum Professional Development	Develop curriculum and assessment tools using State and National Skill Standards. Develop Skill Standards-based TP articulation agreements.
Columbia River STW/TP Consortium ***Clark College***	Nancy Johnson Phone: (360) 992-2228 Fax: (360) 992-2883 njohnson@clark.edu	Implementation of Skill Standards Across the Consortium • Manufacturing Tech • Information Tech • Visual Communications	New Standards Professional Development	Develop and implement Skill Standards in technical areas and provide staff development opportunities.
South King County TP Consortium ***Green River Community College***	Arlene McCollum Phone: (253) 833-9111 x 2583 Fax: (253) 288-3445 amccollum@grcc.ctc.edu	Information Technology Gateway Regional Transportation	Assessment/Curriculum Professional Development New Standards	Prepare instructors, launch, beta test, and evaluate developed Information Technology Skill Standards curricula. Build a Skill Standards based transportation (transit) careers program that will meet the needs of

CONSORTIUM	COORDINATOR PHONE/FAX/E-MAIL	SKILL STANDARDS PROJECT	EMPHASIS	DESCRIPTION
				a new industry in King, Pierce, and Snohomish counties.

TECH PREP SKILL STANDARDS PROJECTS

State Board for Community & Technical Colleges

West Sound Consortium ***Olympic College***	Marcia Brown Phone: (360) 475-7839 Fax: (360) 475-7845 mbrown@oc.ctc.edu	TP 2005 • Information Technology • Residential Construction • Travel, Tourism, & Hospitality	Professional Development	Develop five-year plan to use Skill Standards as foundation for articulation in existing and new program areas.
North Olympic Peninsula Consortium ***Peninsula College***	Ken Jacobson Phone: (360) 417-6471 Fax: (360) 452-6923 kjacobso@ctc.edu	Information Technology Electronics Early Childhood Ed.	Assessment/Curriculum Professional Development	Train faculty and consortium members to apply Skill Standards through assessment and curriculum revisions in selected program areas.
Pierce County ***Pierce College***	Lisa Edwards Phone: (253) 589 7416 Fax: (253) 589-7413 ledwards@cloverpark.k12.wa.us	Manufacturing Technology	Assessment & Curriculum Professional Development	Integration of Engineering/Manufacturing Skill Standards with TP curriculum.
Seattle TP Consortium ***Seattle Community College District***	LeRoy Drake Phone: (206) 587-4175 Fax: (206) 587-3894 ldrake@sccd.ctc.edu	Information Technology • Computer & Network Systems	Assessment & Curriculum Professional Development	Use Information Technology Skill Standards to create assessment and curriculum tools and increase articulation between high schools and college programs.
Skagit Island TP/STW Consortium *Skagit Valley College*	Linda Nelson Phone: (360) 855-3588 Fax: (360) 855-3589 lnelson@swsd.wednet.edu	Carpenters Apprenticeship	New Standards Professional Development	Develop carpenters apprenticeship core Skill Standards as well as develop additional articulation agreements with other state-approved apprenticeship programs.
South Sound TP Partnership ***South Puget Sound Community College***	Regina Lawrence Phone: (360) 754-7711 x 207 Fax: (360) 586-6054 rlawrence@spscc.ctc.edu	Welding	Assessment/Curriculum Professional Development	Establish a Technical Career Pathway based on welding industry Skill Standards that will facilitate articulation of TP courses for grades 9-14.

TECH PREP SKILL STANDARDS PROJECTS

State Board for Community & Technical Colleges

Puget Sound Career Consortium ***South Seattle Community College***	Ken Watson Phone: (206) 241-7660 Fax: (206) 241-7662 kwatson766 @aol.com	Regional Transportation Gateway	New Standards Professional Development	Build a Skill Standards based transportation (transit) careers program that will meet the needs of a new industry in King, Pierce, and Snohomish counties.
Walla Walla CC District Consortium ***Walla Walla Community College***	Jim Willis Phone: (509) 527-4324 Fax: (509) 527-4480 jwillis@mail.ww.cc.wa.us	ASE Automotive Technology Partnership	Assessment & Curriculum Professional Development	Adopt and implement the NATEF-adopted Automotive Service Excellence (ASE) Certification Program for the Automotive Mechanics Programs.
North Central Washington TP Consortium ***Wenatchee Valley College***	Marcia Henkle Phone: (509) 664-2556 Fax: (509) 664-2506 mhenkle@wvcmail.ctc.edu	Information Technology	Professional Development	Develop a Skill Academy in Information Technology for all consortium participants and provide industry internships for instructors.
Whatcom County STW/TP Consortium ***Whatcom Community College***	Linda Cowan Phone: (360) 676-2170 Fax: (360) 752-6767 lcowan@whatcom.ctc.edu	Automotive Technology Information Technology	Assessment & Curriculum New Standards Professional Development	Adopt and implement the NATEF-adopted Automotive Service Excellence (ASE) Certification Program for the Automotive and Diesel Equipment Technology Programs. Develop an integrated, post-certificate of proficiency, Information Technology program using the TP *Information Technology* Skill Standards-Based Curriculum as the model.
Yakima Valley TP Consortium ***Yakima Valley Community College***	Nick Parisi Phone: (509) 574-4756 Fax: (509) 574-4751 nparisi@ctc.ctc.edu	Information Technology	New Standards	Use Information Technology Skill Standards to develop a career path in IT from grades 11-14, with articulated classes for advance placement in the college IT program

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Skill Standards Projects	College Partners	Industry Partners	Completion Date
Information Technology • Database Administration Associate • Information Systems Operator/Analyst • Interactive Digital Media Specialist • Network Specialist • Programmer/Analyst • Software Engineer • Technical Support Representative • Technical Writer	Bellevue Community College *	71 industry partners including Blue Cross, Boeing, Microsoft, SeaFirst, Seattle Times, Starbucks, UW Medical Center and Weyerhaeuser	December 31, 1996
Cosmetology • Cosmetologist • Salon Coordinator	Seattle Community Colleges * Clover Park Tech College Renton Tech College Seattle Central CC Shoreline CC South Seattle CC	Cosmetology Board, Dept of Licensing, Cosmetology Apprenticeship Committee, Illusions, 22 change Design, 4th and Union Hair	April 30, 1998
Allied Oral Health Professions • Dental Assistant • Dental Hygienist • Dental Laboratory Technician • Dental Practice Administrator • Denturist	Pierce College * Bates Tech College Bellingham Tech College Edmonds CC	WA State Dental Lab Assn., WA State Dental Assistant's Assn., WA State Denturist Assn., and 15 independent businesses including the NW Dental Management Group, Buzzard Dental Laboratory	March 13, 1998
Manufacturing Technology (MTAG) • Fabricator • Assembler/Installer • Manufacturing Engineering Planner • Technical Designer/Drafter • Tool Engineering Specialist	South Seattle CC * Everett CC Green River CC Lake Washington Tech Renton Tech	Partners include: Boeing, Fluke Corp., Heath Techna, Kaiser Aluminum, SeaCast, Inc., Simpson Tacoma Kraft Paper, Weyerhaeuser, Aerospace Machinists	August 31, 1999
Secondary Wood Products Manufacturing Industry • Wood Products Manufacturing Specialist • Wood Machine Tool Operator • CAD/CAM/CIM Specialist	Bates Technical College * Bellingham Technical College Clover Park Tech College Grays Harbor College Spokane CC	40 businesses including the Evergreen Partnership, Ostermann & Scheiwe, USA, Northwest Policy Center, Posey Manufacturing Co	March 31, 1999

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Skill Standards Projects	College Partners	Industry Partners	Completion Date
Early Childhood Education • Lead Early Childhood Education Teacher • Family Child Care Provider	Peninsula College * Highline Community College Olympic College	DSHS Office of Childcare Policy, Head Start, WA State Family Child Care Assn., ECEAP, Campus Child Care Coalition, School's Out Consortium, US Dept of Labor, Employer Supported Child Care, Child Care Resource and Referral Network, Coastal Child Care Services, Children's World Learning Center's and others	June 30, 1999 for Lead Teacher October 1, 1999 Family Child Care
Natural Resource Technologies • Forestry Technician • Fisheries Technician • Environmental Technician • Natural Resources Technician • GIS Specialist	Grays Harbor College * Centralia College Clover Park Tech College Peninsula College Skagit Valley College Walla Walla CC	Weyerhaeuser, Columbia Pacific RC&D, Soil Conservation Service, Dept of Natural Resources, IAM Woodworkers W2, WA State Labor Council, US Forest Service, WA Dept of Fish and Wildlife, and others	February 28, 1999
Telecommunications • Network Technician	Green River CC *	US West, Communications Workers of America	December 31, 1997
Law Enforcement • Police Officer	Tacoma Community College * Columbia Basin College Olympic College Skagit Valley College Whatcom CC	King County Police Dept., Milton Police Dept., Pierce County Sheriff's Office	May 15, 1999
Chiropractic Technician	Highline Community College *	WA State Chiropractic Assn., WA State Chiropractic Quality Assurance Commission, American Chiropractic Registry of Radiologic Technicians, Council on Chiropractic Education and others	June 30, 1998
Tri-State Skill Standards Project for Food Processing • Laboratory Technician • Operator • Maintenance • Sanitation • Trimmer/Sorter	Columbia Basin College * Yakima Valley CC	Northwest Food Processors Assn., Oregon Economic Development Dept., National Frozen Foods Corp., Basic American Foods/Sunspiced Inc., Circa Food Processing, International Union of Operating Engineers, Teamsters Union-Local 760	March 31, 1999

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Skill Standards Projects	College Partners	Industry Partners	Completion Date
Agriculture-Irrigation • Irrigation Technologist • Turf Management Technician • Agricultural and Diesel Equipment Mechanic • Turf Equipment Service Technician • John Deere Dealership Technician	Walla Walla CC *	Adams Tractor, Wilbur-Ellis Co., Bonneville Power, Agri NW., Nelson Irrigation, Cottonwood Fiber Farm, Private landscape firms and turf farms, John Deere Co., Liberty Ag., and others	June 30, 1999
Paraeducator • General Paraeducator • ESL Paraeducator • Special-Ed Paraeducator	Walla Walla CC * Bates Technical College Highline CC North Seattle CC	OSPI, Public School Employees of WA, WA Education Assn.	June 30, 1999
Travel/Tourism and Travel Transportation • Travel Consultant	Edmonds CC *	Lynnwood Chamber of Commerce, Travel Agents International, Euro-Connection, SAS, Doug Fox Travel,/BTI Americas, Travel House, Mill Creek Travel, others	June 1, 1999
Retail Skill Standards • Retail Sales Associate	Clover Park Tech College *	Washington State Retail Association, Eagle Hardware & Garden, J.C. Penny, Office Max, Bakers/Leeds, Carlson's Pool & Spa, Emporium Department Stores, Innovative Designs, Merksamer/Fred Meyer, and other employers	June 30, 1999
Vocational Instructors	Renton Technical College *	Community and Technical Colleges, Industry Human Resource trainers, others	June 30, 2000
Optician Technician	Highline Community College * Seattle Central CC Spokane Community College	Optician Association of Washington, independent businesses	August 31, 1999
Chemical Dependency Counselor	Tacoma Community College * Edmonds CC Pierce College Spokane Falls CC	NW Consortium of Chemical Dependency Educators and others	September 1, 1999

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Skill Standards Projects	College Partners	Industry Partners	Completion Date
Hearing Instrument Fitters/Dispensers	Spokane Falls CC * Bates Technical College Seattle Central CC	Washington State Department of Health/Hearing and Speech, Washington Speech and Hearing Association, Washington Hearing Aid Society, Washington Society of Audiologists, Miracle Ear Hearing Systems/Bauch & Lomb, numerous independent businesses, hearing instrument fitters and dispensers	June 20, 1999
Wireless Communications	Seattle Central CC	Global Wireless Education Consortium AT&T American Electronics Association King County Labor Council, AFL-CIO	June 30, 2000
Biomedical	Shoreline CC Bellevue CC Lake Washington TC Seattle Central CC	Washington Biotechnology and Biomedical Association Immunex Corporation Fred Hutchison Center ICOS Corporation Zymogenitics, Inc. Pathogenesis Corporation Cell Therapeutics, Inc. Bio-Rad, Intracel Diagnostics Division MDS Panlabs Molecumetics Limited Neorex Corporation	June 30, 2000

Skill Standards Assessment Projects

Skill Standards Projects	Lead College	Industry Partners	Completion Date
Assessment Skill Standards Project	Edmonds CC *	IAM/Boeing Quality through Training Program	June 30, 1998
Assessing Skill Standards in Education and Industry	North Seattle CC * Bellevue CC	WA Council of the American Electronics Association	June 30, 2000

* Lead Colleges

Washington State Skill Standards Project Contacts

	Project	College	Contact	Phone	Fax	E-mail
1.	Agriculture and Irrigation	Walla Walla	Jim Willis	509-527-4324	509-527-4480	jwillis@mail.ww.cc.wa.us
2.	Allied Dental Health	Pierce	Sharon Golightly	253-964-6661	253-964-6313	sgolightly@pierce.ctc.edu
3.	Biotechnology/ Biomedical	Shoreline	Holly Moore	206-546-7859	206-546-5826	hmoore@ctc.edu
4,	Chemical Dependency	Tacoma	Mike Towey	253-566-5213	253-566-5365	mtowey@tcc.tacoma.ctc.edu
5.	Chiropractic	Highline	John Huber	206-878-3710 x3843	206-870-3780	jhuber@hcc.ctc.edu
6.	Cosmetology	Seattle	Myrtle Mitchell	206-587-5482	206-344-4390	mmitch@sccd.ctc.edu
7.	Early Childhood Education	Peninsula	Barbara Clampett	360-417-6497	360-417-6497	bclampet@pcadmin.ctc.edu
8.	Food Processing	Columbia Basin	Terryll Bailey	206-525-7175	206-729-1534	terryll@foxinternet.net
9.	Hearing Instrument Fitters	Spokane Falls	Tom Hopkins	509-533-3429	509-533-4143	tomh@sfcc.spokane.cc.wa.us
10.	Information Technology	Bellevue	Pete Saflund Suzanne Marks	425-373-4216 425-603-4017	425-562-6193 425-562-6163	nwinfo@bcc.ctc.edu smarks@bcc.ctc.edu
11.	Manufacturing	South Seattle	Terryll Bailey	206-525-7175	206-729-1534	terryll@foxinternet.net
12.	Manufacturing Technology	Pierce	Paula Norby	253-840-6645	253-964-6764	pnorby@pierce.ctc.edu
13.	Natural Resources	Grays Harbor	Don Samuelson	360-538-4011	360-538-4299	dsamuels@ghc.ctc.edu
14.	Opticician-Dispensing	Highline	Larry Shank Jill Childs	206-878-3710 x3131 x3204	 206-870-3780	lshank@hcc.ctc.edu jchilds@hcc.ctc.edu
15.	Para Educators	Walla Walla	Jim Willis	509-527-4324	509-527-4480	jwillis@mail.ww.cc.wa.us
16.	Police Officers	Tacoma	Erik Laurentz	253-566-5161	253-566-5365	elaurent@tcc.tacoma.ctc.edu
17.	Retail Sales Associate	Clover Park	Sharon Callaham	253-589-5535	253-589-5699	scallaham@ctc.edu
18.	Secondary Wood Products	Bates Tech	Barbara Kuhn	253-573-4607	253-596-1775	bkuhn@ctc.edu
19.	Travel and Transportation	Edmonds	Beth O'Donnell Donne Kristof-Nelson Mary Ellen O'Keeffe	425-640-1208 425-640-1635 425-640-1316	 425-640-1239	bodonnel@edcc.edu mokeeffe@edcc.edu
20.	Telecommunications	Green River	Darlene Miller	253-833-9111 x2210	253-288-3445	dmiller@grcc.ctc.edu
21.	Vocational Instructors	Renton Tech	Norma Goldstein	425-235-4234	425-235-7832	ngoldste@ctc.edu
22.	Wireless Communications	Seattle Central	Myrtle Mitchell	206-587-5482	206-344-4390	mmitch@sccd.ctc.edu

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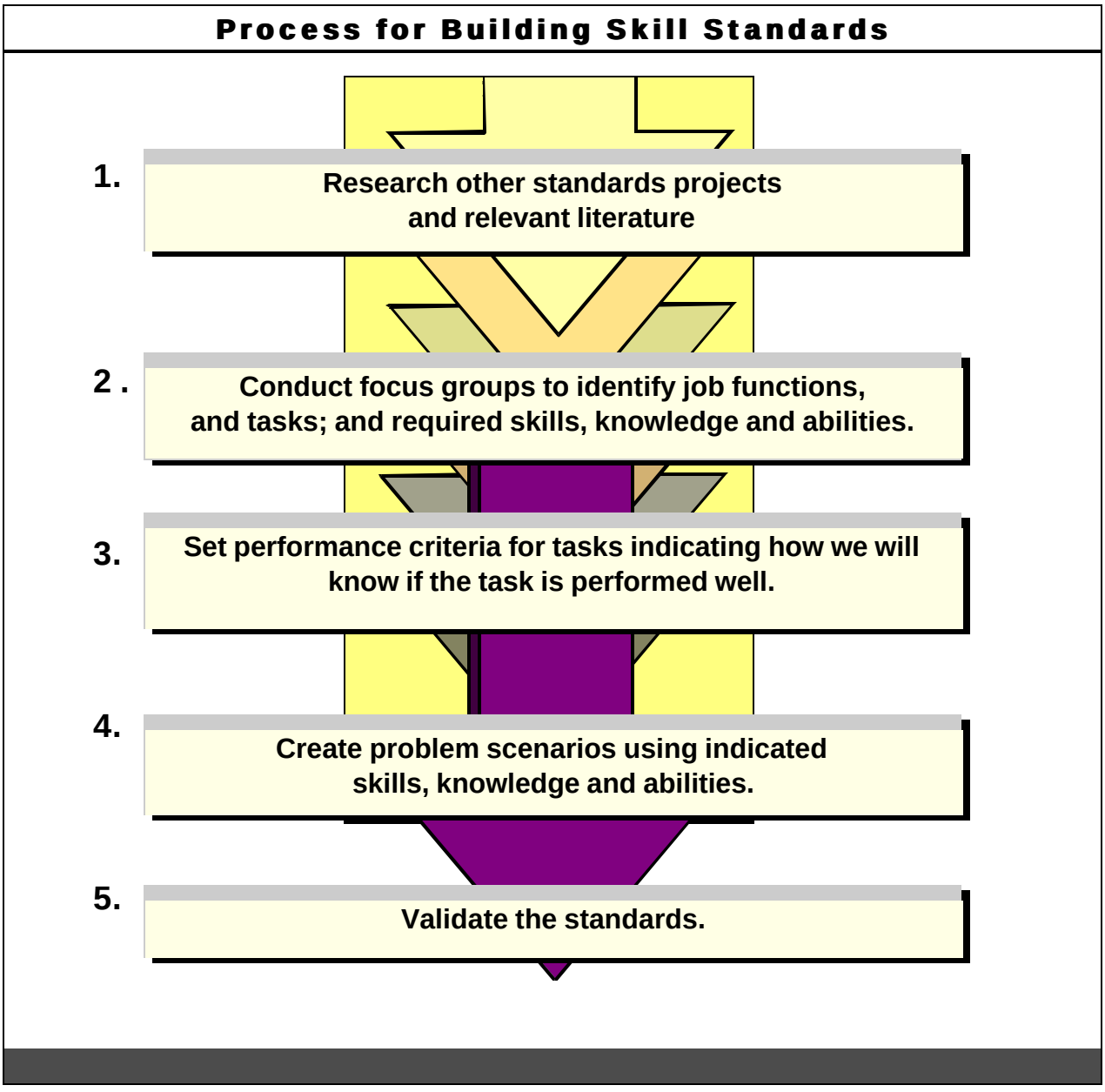
Section II

How Are Skill Standards Developed?

How Are Skill Standards Developed?

—Developing Skill Standards: A Recommended Process

Flow Chart



—Skill Standards Framework

Each of the skill standards in Washington State consist of a generalized job cluster identifying major job functions, tasks, and relevant performance criteria, the technical and foundational knowledge skills, and abilities needed to perform the task well and contextual scenarios which demonstrate use of the functions and tasks.

After identifying 5-8 major job functions or duties (key parts of a job) clear, specific, high level, tasks are identified. One test of a good **task statement** is Can you video-tape the person performing the task, can you see what the person is actually doing when you read the statement? **Task statements** take the following form:

1. Implied subject *(a person in this job)*.
2. Singular verb *(For example action verbs might include: construct, initiate, coordinate, test, check, develop, evaluate, conduct, respond, document).*
3. Any modifiers needed for clarity, such as:
    - Gather information to identify customer's requirements.
    - Define scope of work to meet customer's requirements.
    - Approach customer to get money on past due account.
    - Check for bubbles in paint under microscope.
    - Perform analysis to identify problem cause.
    - Maintain financial records, such as daily cash reports, weekly sales, monthly statements.
    - Instruct others on product usage, procedures and/or standard operating practices.
    - Prepare site for installation and testing of switching and transmission equipment.

Performance criteria identifies how we know that the task is performed well. it is the standard of performance indicating the necessary outcomes of workplace tasks. Each criterion should begin with the outcome and be followed by the qualifiers of that outcome. The following questions are helpful when defining performance criteria:

1. What is the purpose of this task?
2. What are the key desired outcomes of this task?
3. What are the key qualifiers or qualities of those outcomes?
4. What aspects of work organization, safety, procedures, etc. are critical to competent performance?

Typical qualifiers include:

accurately, concisely, clearly, correctly, timely, completely, appropriately, effectively, reliably, safely, promptly, confidentially, politely, patiently, ethically, respectfully, in accordance with company procedures, within required tolerances.

Examples of performance criteria:

- The constraints are accurately and completely identified.
- User accounts are set up following standard operating procedures.
- Criteria for satisfying customers' needs are clearly and concisely identified.
- The problem identified clearly defines a gap in expectations.
- Solutions reflect concern for cost, schedule, and long-term implications.
- Documentation is completed accurately, at the specified time and forwarded in an approved manner.
- Tools and work aids are positioned, used and repositioned to achieve maximum efficiency.

Knowledge, Skills and Abilities are defined as follows:

1. **Knowledge** is a specific set of information that may be gained from particular academic disciplines, from organizational procedure manuals, or from experience. (Examples: Knowledge of principles of programming, knowledge of company operating procedure, knowledge of computer terminology, knowledge of child development stages.)

2. **Skills** suggest proficiency in an applied activity, often in a physical activity, but possibly in a mental or interpersonal sense. (For example, time management skills, skill in the use of word processing, speaking, giving presentations.)

3. **Abilities** are broad human characteristics that result either from native talent or from a variety of experiences over time. An ability underlies the successful performance of a large number of tasks. (Examples: analytical ability, ability to persuade, mechanical aptitude, writing ability.)

The task of scheduling airline reservations and hotel accommodations suggests a knowledge of travel agency, airline, and hotel references and procedures; a skill in probing for information; and abilities in the areas of communications, analysis, and planning.

Knowledge, Skills and Abilities together are called **competencies** in our framework.

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Section III

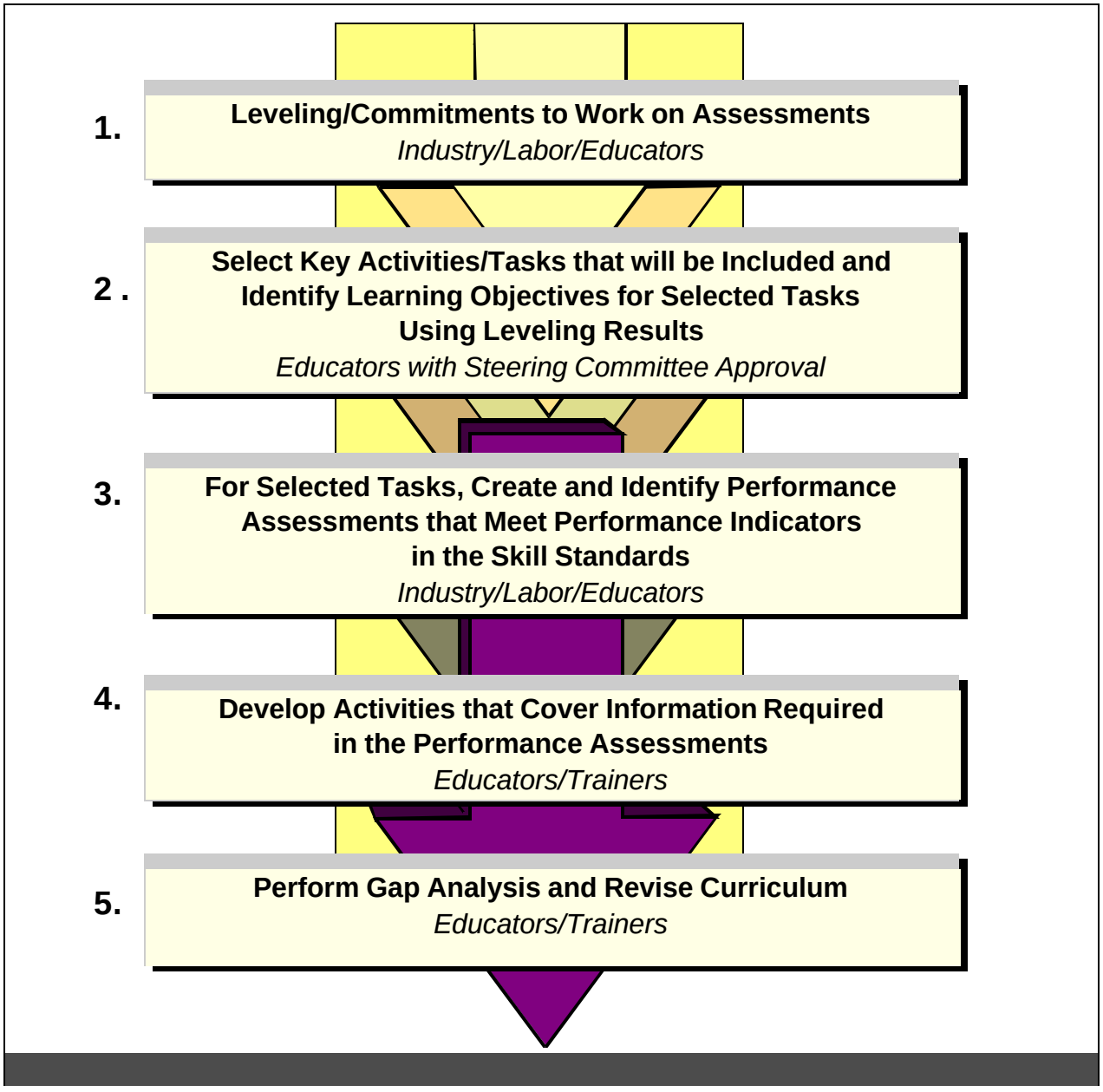
How Are Skill Standards Integrated Into the Curriculum?

How are Skill Standards Integrated Into the Curriculum?

—Implementation Model Overview

Flow Chart

Process for Integrating Skill Standards Into Performance Assessments and Curriculum



—Implementation Model

1. **Leveling/Commitments to Work on Assessments**
   Industry/Labor/Education

   - Industry/Labor/Educators meet to determine what level of competency is desired from the relevant school grade levels in certificates/degrees.
   - Commitments are obtained for educators and subject matter experts to be released for the assessment development process.

2. **Select Key Activities/Tasks that will be Included and Identify Learning Objectives for Selected Tasks Using Leveling Results**
   Educators with Steering Committee Approval

   - Educators meet to determine which key activities/tasks are appropriate for their program, track, class, etc., based on the leveling information obtained in step one.
   - The selected tasks are reviewed and approved by the Steering Committee.

3. **For Selected Tasks, Created and Identify Performance Assessments that Meet Performance Indicators in the Skills Standards**
   Industry/Labor/Educators

   - Current classroom assessments which lead to the skill standards and current industry assessments which assess to the performance indicators in the skill standards are identified.
   - Gaps in assessment are noted.
   - New assessments are developed by teams of industry, labor and educators as required.

4. **Develop Activities that Cover Information Required in the Assessments**
   Educators/Trainers

   - Existing activities which meet the requirements are identified.
   - Research is performed to find new activities as required.
   - New activities are developed as required.

5. **Perform Gap Analysis and Revise Curriculum**
   Educators/Trainers

   - Curriculum is compared to the skill standards, and gaps in technical, academic and SCANS skills are noted.
   - Curriculum is compared to the information required in the assessments, and gaps in content are noted.
   - Curriculum is revised to fill the gaps.

—The Role of the Integrated Curriculum Standard

Modified from ***Education and Work: Designing Integrated Curricula: Strategies for Integrating Academic, Occupational and Employability Standards***.
—Center for Occupational Research and Development (CORD) Nov. 1996

The starting point for curriculum design is the identification of the knowledge, skills, and abilities in a particular area of study and the thinking processes needed to acquire an understanding of and meaningful application of the content. This collection of competencies, information, ideas, and capabilities is shaped by a business and industry perspective as well as the academic perspective. In the information age, reflective thinking must be given added focus. Knowing information is simply not enough; all students must be given the opportunity to apply and use knowledge through higher-order thinking skills and processes, such as analyzing details, synthesizing concepts, determining reliability of source, evaluating evidence, and validating a causal explanation.

Traditionally, content has been defined in several ways. In academic areas, the writing of textbooks has anchored the base of knowledge in the traditions of each subject as interpreted by expert authors, who are typically university professors, researchers, or experienced elementary and secondary teachers. In vocational programs, content has been defined both by textbook authors and by competency inventories developed with the assistance of occupationally-experienced practitioners and processes such as Developing a Curriculum (DACUM). Validation of both academic and vocational materials has relied on review processes involving other knowledgeable practitioners with similar expertise.

While these processes are successful from some perspectives, they lack a mechanism for integration or connection with other areas of the curriculum. Developing those connections is left to the teacher and to the students. Since teacher training typically does not provide the experience needed to integrate many areas of content, the student ultimately inherits the task of finding meaningful relationships among the many areas studied. Unfortunately, curricula often do not offer the student the frame of reference and thinking tools to apply and integrate material learned. This undesirable situation can be addressed only by providing a readily usable structure that assists both teacher and student in establishing interconnections among areas of learning. The concept of Integrated Curriculum Standards (ICSs) provides a structure that systematically connects to accepted standards in academic, employability, and occupational domains.

The advent of standards in areas of academic content, employability skills, and occupational capabilities provides a rich source of data to define curriculum content. Standards have not been perfected, and the quality and level of development vary considerably; nevertheless much progress has been made, and it is reasonable to expect standards will continue to expand and improve. If meaningful ways are found to use standards effectively, their further development will be encouraged.

Development of standards has opened the analysis of content to much wider view. Content experts have, in effect, shared their basic understandings of content, whether academically or occupationally oriented, through the publication of these standards. Curriculum development now can be based on the fundamental building blocks of content rather than on collected interpretations in the form of textbooks and course syllabi prepared in isolated areas of content. Curriculum developers have the opportunity to seek the deeper connections among the building blocks and present material to students in ways that expose the contexts and relationships

among areas of knowledge and information. In addition, the interpersonal and intrapersonal application of knowledge and skills fosters the development of students who are better prepared to meet the demands of a highly complex world of work.

At a more fundamental level, examination of standards opens the opportunity to rethink what is important within curricula and to add or remove elements based on a comparative critique recognizing that an overwhelming body of knowledge is available in modern society. Sequencing of content also can be reexamined to find efficiencies in learning by more closely connecting preparatory knowledge with applications. For example, not all trigonometry must be taught at one time in one course in which the future utility of some of the subject material may not be evident.

Related to employability, Daniel Goleman makes a connection to "emotional intelligence."[35] Goleman has the support of Howard Gardner whom he quotes as saying

> *"...(I) appreciate how crucial these emotional and relationship abilities are in the rough-and tumble of life. Many people with IQs of 160 work for people with IQs of 100, if the former have poor intrapersonal intelligence and the latter have a high one. And in the day-to-day world no intelligence is more important than the interpersonal. If you don't have it, you'll make poor choices about who to marry, what job to take, and so on. We need to train (students) in the personal intelligences in school."*

The difficulty in using this rich source of information lies in the volume and complexity of the integration process. In raw form, the collection of standards that exists today fills several hundred pages of print material representing tens of thousand of distinguishable elements of information. Among these elements are many that overlap, duplicate, or restate others from various perspectives. It is unrealistic to expect teachers or even school systems to digest and translate this volume of information into workable instructional programs without assistance. Required are both a process and much preliminary work to assist educational practitioners in the development of integrated curricula based on a synthesis of standards within specific areas.

Small steps can be taken as a way of progressing toward these goals within the limitations of local capabilities. Incremental reform can use the Skill Standards to

- infuse standards into existing courses,
- augment contextual materials with use of standards,
- create linkages to worksite learning experiences based on standards,
- implement project-based and thematic-based curricula based on standards,
- use student portfolios as learning tools,
- incorporate learning technology with specific connections to standards,
- employ embedded and authentic assessment in the curriculum as a learning tool, and
- embed developmental career guidance in a curriculum through the standards.

The collective impact of these steps will lead to major curriculum reform in a manageable progression.

—Infusion of Standards into Existing Courses

Infusion implies a pouring in or incorporation of something that gives new life or significance to a curriculum. Standards are a resource that can be infused into existing courses with little or no change in structure. Teachers in an existing class who are addressing a topic that relates to a particular standard can use the supporting database to identify examples of occupational contexts for the topic. Since teachers cannot be familiar with all occupational fields, the standards provide reference connections to applications of the topic that not only assist the teacher but also can be assigned for student research.

Used in this form, the concepts of standards become a teaching/learning resource that adds contextual motivation to students while providing the teacher assistance in lesson planning. Over time, the teacher can become familiar with a range of academic and occupational connections in a relatively efficient manner while providing an enriched program for the student. Workshops and other professional development activities can be used to accelerate the orientation process for teachers.

Another advantage of the infusion process is that it can be initiated at the local level immediately with no system or structural changes. In fact, infusion provides a mechanism for familiarizing teachers with these concepts in preparation for broader-scale implementation, and it provides an opportunity for teachers to critique the materials and offer suggestions for improvement. It is an opportunity to develop commitment to the concept at the grassroots level while providing support for the teacher in the form of ideas for lesson planning. Infusion of standards is the easiest step toward broader implementation of integrated curriculum concepts.

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Section IV

How Do We Assess Skill Standards?

—Performance Assessment Overview

Within a skill standards or competency-based system, assessment is the generation and collection of evidence of performance which can be matched to specified explicit standards which reflect expectations of performance in the workplace. There are two main forms of evidence—(1) evidence of actual performance— (2) evidence of underlying knowledge, skills and abilities.

The types of evidence may vary, and will include—(1) direct evidence (work completed by the performer)—(2) indirect evidence (supporting evidence and information about the performer).

Evidence can be collected in a wide variety of educational or business settings. To a large extent, this will be determined by the range of opportunities for demonstration available. Often it is difficult to actually perform the task in the authentic work setting. In this case evidence generated during an educational course or an in-house training session can be collected by individuals and added to their overall portfolio.

By requesting that the student or trainee produce tangible results in the form of take-away products (videos, electronic products, tapes, paper products), the participant will have created real evidence which can be shown to human resource personnel, hiring managers, supervisors, or assessors. When assessing these products the trained assessor will seek:

validity—currency—authenticity—sufficiency

Therefore, when designing Skills Standards based assessment for your educational course or training session include consideration that the assessment process and results meets these four criteria:

validity—it clearly relates to the relevant standards (examples of this would be a sample of a simple CD animation for a Digital Media Specialist, or a video presentation of a mini-lecture for a teacher or trainer).

currency—it calls for a demonstration of the current standards of the industry.

authenticity—produced by the individual being assessed; it is their own work. Team activities will be useful to demonstrate the skills and abilities to work effectively with others, not necessarily the total end results. The individual can if possible, identify their part of the team project to demonstrate evidence of their own results.

sufficiency—enough evidence is collected to match the key task and the performance criteria included in the Skill Standards.

When designing your educational or training course keep in mind that you can assist participants in generating high-quality evidence of performance or of underpinning skills, knowledge and abilities which will help them to be successfully assessed as fully competent. Seek the input of the participants and their "customers" to identify the kinds of evidence that will meet the criteria for successful demonstration of performance.

—Adapted from *Designing Competency-Based Training*, Shirely Fletcher, 1991, Pfiffer & Company, p. 86-88.

—A Model for Assessment Using Skill Standards

Susan Simosko, Simosko Associates, Inc.

Introduction

There is little doubt that planning, teamwork and creative thinking make the job of assessing individuals against skill standards easier and more satisfying for all. By following a few key principles, you will be able to develop a sound model for assessing skill standards regardless of the context in which you are working. Whether you are an educator or trainer or a supervisor or manager using the skill standards in the workplace, you will find that once you establish a user-friendly, transparent system of assessment everyone will be:

- Clearer about the roles and responsibilities associated with the assessment process
- Able to respond more efficiently and effectively to the needs of learners
- More satisfied with the assessment process itself, and
- More confident that the desired outcomes can be achieved.

In this article we have highlighted eight principles to make the job of assessing skill standards easier to carry out and administer.

Eight principles of good assessment

In our work over the years, we have identified eight key principles which, if followed, make assessment a more natural, meaningful and straightforward process. The eight principles can best be stated as:

1. Put learners first.
2. Integrate assessment into the *learning* process.
3. Apply the concept of triangulation.
4. Meet technical requirements.
5. Involve others.
6. Keep records carefully.
7. Seek creative solutions.
8. Keep it simple.

Each one of these principles can play an integral part in helping you establish a sound and workable system for assessing skill standards.

Put learners first.

Many people pay lip service to this principle, but in skill standards assessment it's essential that we take it seriously. Since skill standards provide frameworks for learning, our job is to ensure that each and every learner is as successful as possible. For many individuals, receiving a blueprint of the knowledge, skills and abilities they need to acquire will be a new experience. For this reason, the skill standards need to be presented in a way that:

- Enables every learner to understand what is expected
- Promotes self-awareness through reflection and honest self-assessment
- Encourages the use of diverse and multiple forms of evidence and
- Enables the learner, trainer and others to easily monitor progress and celebrate successes.

Learner profiles

One of the most effective ways to do this to create a user-friendly checklist of questions based on the skill standards.[1] This will begin to create a realistic profile of what the learner knows and can do and identify what more he or she needs to achieve. For example, using an example from the Information Technology Skill Standards (A1)[2], the learner might be asked:

- Do you gather data to identify the requirements of a particular project?
- Do you interpret, evaluate and confirm these requirements?

From this, the learner might be led to the performance criteria and asked to evaluate whether he or she meets these "all the time," "some of the time," "seldom," or "never."

Taken a step further, this checklist or booklet could also ask each learner to describe occurrences or list examples of his or her work (whether classroom based or from employment), and describe any particular problems or issues he or she addressed in this area.

The outcome of this self-assessment will give the learner (and the advisor, trainer and/or assessor) a good profile of:

- what the learner already knows and can do and
- what more he or she may need to learn.

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[1] This checklist can be either paper- or technology-based.

[2] *Building a Foundation for Tomorrow: Tech Prep Information Technology Skill Standards-Based Curriculum.* Northeast Tech Prep Consortium, 1997

Clues about evidence and assessment options

Another way the assessment process can be made more learner-centered is to give learners a clear idea of the scope and nature of the evidence they need to develop and/or present in order to show that they meet the skill standards. This means educators and trainers—those people responsible for the assessment process—need to think carefully about the full range of evidence learners could present and the various assessment options that could be used. Traditional educators have long relied on written tests, but skill standards assessment require us to go well beyond written examinations because the focus is far more on the assessment of performance than on the knowledge that underpins all occupations.

Part of being focused on the learner is recognizing that different people have preferred ways of being assessed. Just as individuals have different learning styles, there is little doubt that people also have preferred assessment styles. The more information we can give to learners about the nature of the evidence they can use to prove they meet the skill standards, the more likely we are to support people to do their best.

What sort of information should they receive? They need to know about the nature and amount and currency of the expected evidence. They need to know in what contexts they can develop their evidence, e.g., classroom only, at work, in their communities, etc. They need to know in what form the evidence can be presented. They need to know how others can contribute to the assessment process, e.g., Can a workplace manager attest to the learner's ability in one or more areas of the skill standards? Can a college-based assessor observe the individual at work or in a community-based setting? Can members of a classroom-based team assess the learner?

In addition, learners need to know how various assessment strategies operate. For example, they need to know how they will be rated during workplace demonstrations, simulations or role plays; they need to know how to develop a portfolio, use a computer-generated profiling system or prepare for an oral assessment. They need to know the roles and responsibilities of all those participating in the process—from advisors to assessors and they need to know the timeframes and, if relevant, any fees to be paid.

The actual evidence and assessment details will vary according to each set of skill standards. But the important point is that this information needs to be identified in advance and presented to the learner prior to the start of the assessment process. In this way he or she will have a clear idea of what needs to be learned, how to prepare and how to generate the best possible evidence for the assessment.

- **Integrate assessment into the *learning* process.**

All too often traditional assessment is viewed as a stand-alone process that comes at the end of a learning or training program. It is viewed as meaningful only if it is "painful," "competitive" and "objective."[3] In skill standards assessments we have a unique opportunity to overcome these assessment myths by recognizing that assessment is an

[3] *An A-Z of Assessment Myths* in Competence and Assessment Briefing Series, Number 4, Employment Department Group, Sheffield, 1991.

essential component of the learning process. It is not something that must be painful; it is not something that should pit one learner against another and it should not be based on a single assessment event. Rather, skill standard assessment should encourage the active involvement of the learner as a natural outcome of his or her commitment to learn—whether at work or in the classroom. Assessment-as-learning is about personal achievement, not about how well one learner compares to others. Assessment as learning should be based on multiple forms of evidence, derived directly from the learning experience, and a series of assessment decisions made over time.

Ongoing feedback

There is strong evidence emerging[4] that the quality and regularity of feedback is an essential component of supporting learners to succeed in achieving their learning goals. Learners need to know how they are doing during the learning process. Formative assessment is one way to do this. It has been reported[5] that assessment that diagnoses learners' difficulties and provides constructive feedback leads more readily to significant learner gains. Remembering that *skill standards provide a framework for learning* can help us focus on assessment as a profound and necessary tool to promote learner achievement.

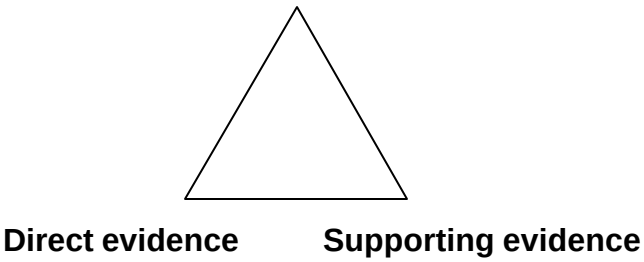
- **Apply the concept of triangulation.**

Just as a three-legged stool is stable so, too, we can ensure the "stability" of skill standards assessment by ensuring that different types of evidence contribute to the assessment process.

As shown in Diagram 1, within each skill standards assessment you will want to seek:

- the learner's self assessment of his or her performance
- direct evidence of the learner's performance and
- supporting evidence that provides additional information about the learner's competence against the skill standards.

Diagram 1



Self-assessments can be presented in writing or orally. Depending on the particular skill standards, the self assessment might describe examples of the learner's satisfactory

[4] *The Power of Feedback*, Times Educational Supplement, London, February 6, 1998.
[5] Ibid.

performance, the context in which the performance was/is carried out, a description of particular problems or issues addressed, etc. In short, self-assessments should give an overview of how the learner has performed and how he or she has drawn on the knowledge and skills required to meet the performance criteria expressed in the skill standards.

Direct evidence relates to the actual performance of the learner or to the outcome of his or her performance. An observed demonstration, for example, is direct evidence. Something made or prepared by the learner, for example, a training manual, an operations schedule, or a series of welds are examples of the outcome of performance.

Supporting evidence refers to information generally provided by others that supports the learner's self-assessment and the direct evidence. In some contexts, supporting evidence serves to authenticate the other forms of evidence. Letters of "validation"[6] from employers or peer assessments are good examples of useful supporting evidence.

To use the concept of "triangulation of evidence" and develop sound support materials to guide learners through the assessment process, it may be helpful for those responsible for the assessment process to ask themselves:

> **Self-assessment**: What is it that we need to know from the learner? What will help us determine whether this individual really knows and can do what he/she claims against the skill standards? How can we be sure he/she has integrated the necessary skills and knowledge? Should this self-assessment be written or orally presented by the learner? What are the time and cost implications of each?
>
> **Direct evidence:** What is the best type of direct evidence? Are there alternatives? How many examples do we need? During what time frame do they need to be produced? From what contexts could they be derived? How should these be presented?
>
> **Supporting evidence**: What sort of information will round out the picture of this learner's achievement? How can the learner be supported to develop or gather useful supporting evidence?

Using these questions in conjunction with each "unit" of the skill standards, will enable you to develop a clear framework of evidence requirements for each assessment and develop user-friendly materials to support learners through the process.

[6] Letters of validation are distinguished from reference letters in that they attest to the learners' actual performance against the skill standards. They do not "recommend" the learner; rather, they describe in some detail his or her performance over time.

Meet technical requirements.

All skill standard assessments must meet technical requirements. Ensuring that each assessment is **valid**, **reliable** and **sufficient** is key to ensuring the overall integrity of the assessment process. To determine whether the assessment is **valid,** you may need to ask:

- What is it we are trying to find out?
- Does this process actually assess what it is we are trying to find out?
- How does the evidence used during the assessment relate to the skill standards?

For example, if you are trying to confirm that an individual can perform the skill standards in a way that reflects the performance criteria, you need to make sure that you assess *performance,* not simply knowledge about that performance. You need to make sure that the evidence relates directly to what the skill standards describe.

To determine the **reliability** of the assessment, you may need to have more than one assessor review the evidence and determine whether he/she makes the same decisions as the first assessor. Many organizations carry out consistency studies—rather than large-scale reliability studies—as they begin a skill standards assessment process. In this way, they determine whether the assessors are working to a common understanding of the requirements of the skill standards and interpreting the assessment evidence in comparable ways.

Sufficiency relates to the amount of evidence learners are expected to produce for the assessment. As you establish your assessment system, you will want to ask yourself:

- What is the minimum amount of information or evidence required for this assessment?
- What are the critical components?

Over assessment is one of the most time-consuming, expensive problems in performance-based assessment. Although it is natural for new assessors to start out seeking more evidence than is really required, with experience and greater understanding about the use of multiple forms of evidence, the inclination to over assess should diminish.

- ## Involve others.

The very nature of skill standards suggests that in today's world "learning has no boundaries." Although many people still rely on classroom instruction to help them learn, many do not. Deep and profound learning occurs at work, at home and in communities. Because of this, it is likely that many people will want recognition for the skills and knowledge they already possess as part of their effort to meet the assessment expectations of the skill standards. For this reason, it may be useful for the implementers of skill standards to think about how they can draw on the expertise of others to contribute to the assessment process. For example, a supervisor who regularly observes a manufacturing specialist perform a wide variety of functions in the workplace may be far better placed to assess an individual's performance than a college-based

instructor. There are many examples of colleges and universities now working collaboratively with volunteer assessors from the workplace and the community.[7] In many respects, external assessors can add significantly to the validity and credibility of the assessment process.

- **Keep records carefully.**

Another key principle, often overlooked, is the need to keep careful records. Learners, advisors, assessors, and administrators each need to have information about the process and outcome of the assessment process. In planning for skill standards assessment, it is essential to establish an easy-to-use system, one that provides information in a clear, accessible fashion over time. Taking time at the beginning to design a sensible system of recordkeeping can save considerable time and effort later. The three key questions you will want to ask yourself at an early stage are:

1. Who will need to know what and for what purpose?
2. When will they need it?
3. In what form should it be available?

- **Seek creative solutions.**

Skill standards offer a stimulating opportunity to do things differently—to meet learners' needs in new ways, to identify new types of evidence and assessment options, draw on the expertise of external assessors and to record the outcomes of the assessment process in non-bureaucratic ways. Setting up and administering skill standards requires an open mind, good planning and creative problem solving. Since the implementation of skill standards is new to many people, it will be important to draw on their expertise while at the same time, challenging their thinking to continue to build a system around "putting learners first." In implementing skill standards assessments for the first time, not everything may go as planned. Use these experiences as an opportunity to develop new ideas and strategies.

- **Keep it simple.**

Fundamentally, skill standards assessments should be about motivating and enabling people to learn, nothing more and nothing less. In the process of implementing skill standards, whether in the classroom or at work, it is essential to bear this in mind. It is sometimes helpful to draw a picture of the assessment process, showing exactly what steps the learners need to follow. At each step you and your colleagues and/or students might ask yourselves: Is this the best we can do? How can we make this system better serve the learner? Working to "keep it simple" at each step in the process will enable you to find sound and constructive answers to both questions.

[7] Interested readers may wish to obtain a copy of *The Volunteer Assessor at Alverno College*, Milwaukee, WI, 1989.

—Top 10 Reasons Why Assessment is a "Good Thing"

1. Because when it is connected thoughtfully to learning and teaching it creates a more coherent learning experience for students.

2. Because it makes public the criteria we use to judge student performance and teaches students what they need to know or do to achieve our standards.

3. Because it makes our judgments about student performance more credible (see #2).

4. Because it improves learning and teaching by focusing on what gets learned rather than on what gets taught.

5. Because it gives faculty a reason to talk to each other about teaching and learning.

6. Because it creates a standard of continuous improvement, where we routinely ask, "What do we know about student learning? How do we know it? How can we make it better?"

7. Because it provides a forum to challenge our myths.

8. Because it is the common language that connects and prompts conversations across sectors.

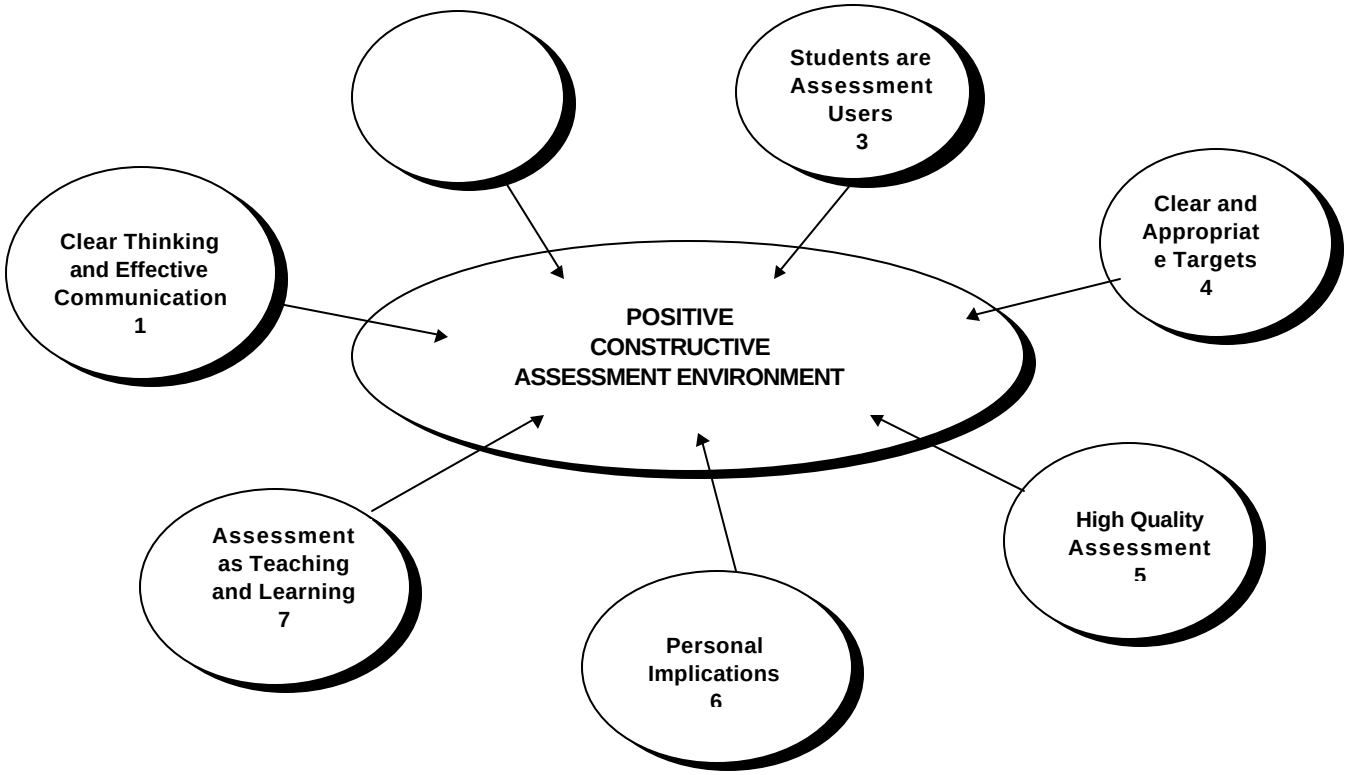
9. Because assessment balances accountability by assuring that *improving* is emphasized as well as *proving*.

10. Because from a policy perspective, assessment assures that the important question, "Did this intervention improve the quality of students' educational experiences?" gets asked.

—Kathe Taylor, Ph.D.
Associate Director for Fiscal and Policy Analysis
Washington Higher Education Coordinating Board, Olympia, Washington.

—Guiding Principles for Assessment

A Set of Guiding Principles



Guiding Principle 1—*Assessments Require Clear Thinking and Effective Communication*

Mention assessment and the first thoughts that come to mind are those of scores, numbers, and quantified indexes often attached to forms of achievement labeled very briefly, such as reading, writing, science, math and the like. The underlying meaning of these single-word labels is rarely explicated. Sound assessment requires clear thinking and effective communication—not merely the quantification of ill-defined achievement targets.

While many assessments do translate levels of achievement into scores, we are coming to understand two important realities more and more clearly. First, numbers are not the only way to communicate about achievement. We can use words, pictures, illustrations, examples, and many other means to convey meaning about student achievement. Second, the symbols used as the basis of our communication about student achievement are only as meaningful and useful as the definitions of achievement that underpin them and the quality of the assessments used to produce them.

Assessment literates are critical consumers of assessment information. They are constantly asking, “Precisely what is being assessed here, and how do I know what the results mean?” They do not rest until they achieve a sharp focus: clear thinking and effective communication, both in their own assessments and those of others.

Guiding Principle 2—*Classroom Assessment is Key*

Teachers direct the assessments that determine what students learn and how those students feel about that learning. Yet, in most educational contexts, it is the standardized district, state, national or even international assessment results that command all of the resources, news coverage, and political power, as though they were the only assessments that count. Nothing could be further from the truth. While these highly visible assessments do contribute to the quality of schools, they are not even in the same league as teachers’ classroom assessments in terms of their direct impact on student well-being.

Nearly all of the assessment events that take place in students’ lives happen at the behest of their teachers. The typical teacher can spend as much as one-third to one-half of his or her professional time involved in assessment-related activities. Teachers make decisions about how to interact with their students at the average rate of one every two to three minutes—and most of those have antecedents in an assessment of student achievement—asking questions and interpreting answers, watching students perform, examining homework assignments, and using tests and quizzes, among other means. Assessment is almost continuous in many classrooms.

Clearly, classroom assessments are the assessments that are most available to teachers. They also are most closely aligned with day-to-day instruction and are most influential in terms of their contribution to student, teacher, and parent decision making (see Guiding Principle 3). Without question, teachers are the drivers of the assessment systems that determine the effectiveness of the schooling process.

Guiding Principle 3—*Students Are Assessment Users*

Students are the most important users of assessment results. Consider the rule of student as consumer of assessment results: Right from the time students arrive at school, they look to their teachers for evidence of their success. If that early evidence suggests that they are succeeding, what begins to grow in them is a sense of hopefulness and an expectation of more success in the future. This in turn fuels the motivation to try, which fuels even more success. The basis of this upward spiral is the evidence of their own achievement, which students receive from their teacher based on ongoing classroom assessments. Thus, classroom assessment information is the essential fuel that powers the learning system for students.

However, when the evidence suggests to students that they are not succeeding in this place called school, what can also begin to grow in them is a sense of hopelessness and an expectation of more failure in the future. This can rob them of the motivation to try, which in turn can lead to more failure and a downward spiral. here again we see consequences of classroom assessment evidence, but this time as the fuel that drives the motivation not to try.

I do not mean to imply that all assessment results should be positive simply to keep students involved and motivated. On the contrary, if students are not meeting our high standards, our assessments must accurately reflect that fact. But if those results reflect a lack of academic success, we must act to change our instructional approach or provide intervention to prevent the pattern of failure from becoming chronic. We must find a different formula that

brings to the student some hope of future success and we must use ongoing classroom assessments to reveal that success to our students.

There are many important assessment users at all levels of the educational process. However, only students use the assessment results to set expectations of themselves. Students decide how high to aim based on their sense of the probability that they will succeed. They estimate the probability of future success based on their record of past success as reflected in their prior classroom assessment experience. No single decision or combination of decisions made by any other party exerts greater influence on student success.

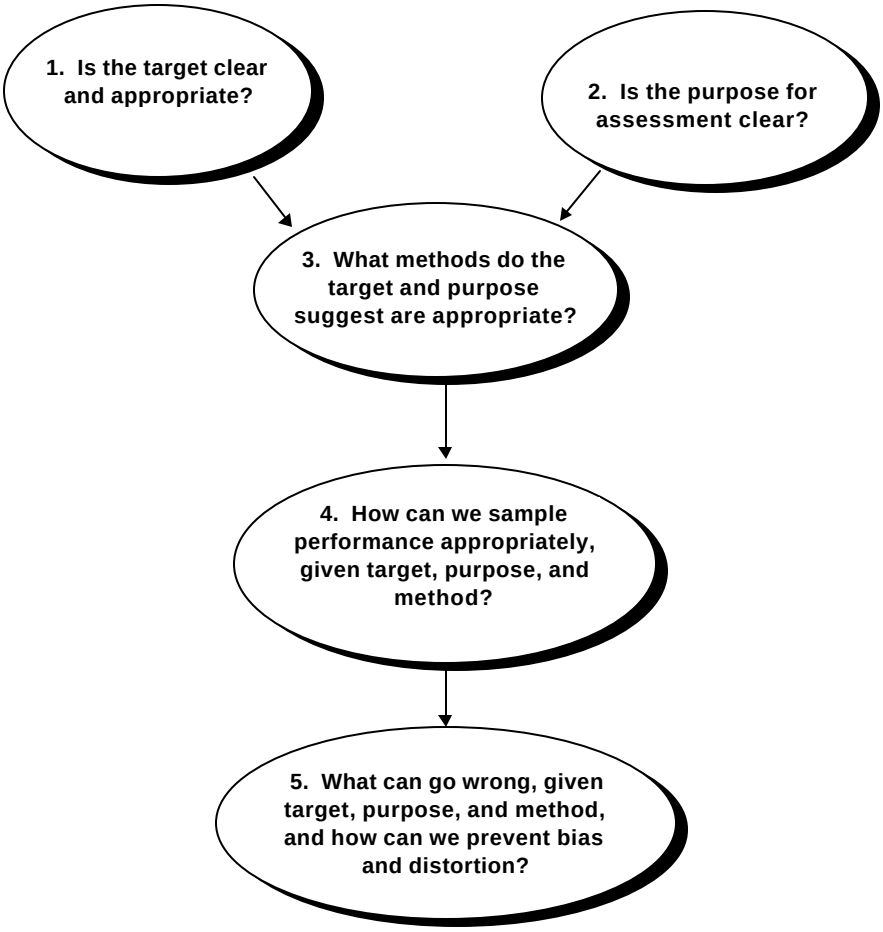
Guiding Principle 4—*Clear and Appropriate Targets Are Essential*

The quality of any assessment depends first and foremost on the clarity and appropriateness of our definition of the achievement target to be assessed. We cannot assess academic achievement effectively if we do not know and understand what that valued target is. There are many different kinds of valued achievement expectations within our educational system, from mastering content knowledge to complex problem solving, from performing a flute recital to speaking Spanish to writing a strong term paper. All are important. But to assess them well, we must ask ourselves: Do we know what it means to do it well? Precisely what does it mean to succeed academically? We are ready to assess only when we can answer these questions with clarity and confidence.

If my job is to teach students to become better writers, I had better start with a highly refined vision of what good writing looks like and a sense of how to help my students meet that standard. If my mission is to promote math problem solving proficiency, I had better be a confident, competent master of that performance domain myself. Without a sense of final destination reflected in my standards and signposts along the way against which to check the progress of my students, I will have some difficulty being an effective teacher.

Guiding Principle 5—*High-quality Assessment Is a Must*

High-quality assessment is essential to all assessment contexts. Sound assessments satisfy five specific quality standards. All assessments must meet all standards. No exceptions can be tolerated, because to violate any of them is to place student academic well-being in jeopardy. These five standards, described here, are illustrated in Figure 1-2. This is the first of many discussions and illustrations of these quality standards that permeate this book. On this first pass, I intend only to give you a general sense of the meaning of *quality*.



Clear Targets. First, sound assessments arise from and reflect clear achievement targets (as in Guiding Principle #4). You can ask this question about any assessment: Can the developer and user provide a clear and appropriate description of the specific achievement expectation(s) it is designed to reflect? If the answer is yes, proceed to the next standard. If the answer is no, realize that there is a very real danger of misassessment. As educators, we must all be confident, competent masters of the achievement targets we expect our students to master.

Most teachers expect their students to master content knowledge sufficiently to be able to use that knowledge productively to reason and solve problems. In addition, many teachers expect their students to develop specified skills and be able to use those skills productively to create products that meet certain standards of quality. Finally, most teachers hope their students will be predisposed to use their various academic proficiencies to meet the highest standards when presented with opportunities to do so within and beyond school. Assessment quality standard number one asks that those who develop or select classroom assessments begin that process with a refined sense of the specific knowledge, reasoning, skill, product, and disposition expectations they hold for their students. In other words, they must understand *what* they are assessing.

Focused Purpose. This standard admonishes us also to begin the design process with a clear sense of *why* we are conducting the assessment. It is impossible to develop a quality assessment unless and until we know how we will use the results it produces. So again, about any assessment you can ask: Does the developer understand the intended uses and has the developer taken user(s') needs into account in developing and implementing the assessment?

There are at least four different assessment stakeholder groups. First, there are those who use assessment results at the classroom level (students, teachers and parents). Each user brings certain information needs to the classroom assessment table, and all needs must be met for schools to be effective. Then there are users at the instruction support level (principals, support teachers, curriculum personnel, etc.); and at the policy level (superintendents, school board members, state department personnel, etc.); and finally at the business and industry level, potential employers want assessment to demonstrate work readiness. Each brings unique information needs and has a right to have those needs met by our assessment systems. There is no single assessment capable of meeting all of these different needs. Thus, the developer of any assessment must start with a clear sense of whose needs the assessment will meet.

Proper Method. A sound assessment examines student achievement through the use of a method that is, in fact, capable of reflecting the valued target. To test mastery of scientific knowledge, we might use a multiple-choice test. But when our challenge is to assess the ability to speak Spanish, we must turn to another method altogether. As stated, we have several different kinds of achievement to assess, and therefore need various assessment methods. These include selected response methods (multiple choice, true/false, matching and fill in), essay assessments, performance assessments (based on observation and judgment), and direct personal communication with students (talking with them). Our classroom assessment challenge is to know how to match the method with the intended target. About any assessment, you can ask: Is the method used here capable of accurately reflecting the kinds of outcomes the user wishes to assess? If the answer is yes, proceed to the next standard. if it is no, be aware that student achievement is about to be misassessed.

Sound Sampling. Almost all assessments rely on a sample of all the exercises we could have included if time were unlimited and the test could be infinitely long. A sound assessment offers a representative sample that is large enough to yield confident inferences about how the respondent would have done given all possible exercises. The realities of classroom life require that we generalize from our sample to the total performance arena being assessed. Each different classroom assessment context places its own special constraints on our sampling procedures. Our challenge is to know how to adjust our sampling strategies as context varies to produce results of maximum quality at minimum cost in time and effort. About any assessment, you can ask: Have we gathered enough information of the right kind, so we can draw confident conclusions about student achievement? If the answer is yes, proceed. If it is no, critical consumers of assessment information should be concerned about student well-being.

Accurate Assessment Free of Bias and Distortion. Finally, this standard demands that we design, develop, and use assessments in ways that permit us to control for all sources of bias and distortion that can cause our results to misrepresent real student achievement. Again, each assessment context presents its own unique sources of interference with accurate assessment. Each assessment method permits errors to creep in when we let our guard down. With multiple-choice tests, for example, poorly written or culturally biased test items can harm the quality of resulting scores. With performance assessments, evaluator prejudice can bias judgments. And so it is with all methods. Our challenge is to know all sources of bias and distortion that can rob assessment results of clear and appropriate meaning, and to know how to

head off those problems before they get a foothold. About any assessment, you can ask: Have the important sources of bias been accounted for during development and use? If the answer is no, you must take or urge action to address unaccounted for sources of error.

Violate any of these five criteria and you place students at risk. Problems arise when assessments are developed and used by those who fail to understand the valued outcome, fail to identify user needs, select an improper assessment method, sample achievement inadequately, or introduce bias. Unsound assessments can lead to misdiagnosed needs, failure to provide needed instructional support, use of inappropriate instructional approaches, counterproductive grouping of students, and misinformation provided to student and parent decision makers.

Guiding Principle 6—*Understand Personal Implications*

Assessment is an interpersonal activity. This principle has two important dimensions. The first has to do with one important reality of life in classrooms. Students are people, and teachers are people, too; and sometimes we like each other and sometimes we don't. Because our assessment methods virtually always include a subjective aspect—where teacher judgment plays a role—there is always the danger that our personal feelings about students can creep into our judgments and bias the results. Unless we are aware of the dangers of this kind of distortion and remain vigilant to the need to remain as objective as possible, we stand the risk of inaccurately assessing the achievement of our students. Judgmental assessment is perfectly acceptable as long as we control for personal sources of bias. We will explore many ways to do this as our journey continues.

Second, assessment is a very complex interpersonal activity that is virtually always accompanied by personal antecedents and personal consequences. Classroom assessments are never the dispassionate, totally objective scientific acts some make them out to be. When we allow our students to be assessed, we expose them to the possibility of academic and personal benefit and harm. In the face of assessment and evaluation, as students or as adults, we are all vulnerable. Our assessments link our students to their constantly emerging academic and personal self-concepts. They provide students with the link to their sense of control over their own well-being in school. Students are more likely to feel in control when they know how to succeed and feel they can influence their own destiny. They lose control when they either don't understand the meaning of success or feel doomed to fail. Sound assessments can keep them feeling in control.

This means we must always strive for the highest-quality assessment, communicate results in a sensitive and private manner, and anticipate results so as to be prepared to offer specific support to students at any level of achievement.

Guiding Principle 7—*Assessment As Teaching and Learning*

Assessments and instruction can be one and the same if and when we want them to be. Sometimes, it's all right to conduct an assessment merely as a status check not linked to an immediate action. However, at other times it's a great idea to turn assessment events into powerful instructional tools. An excellent way to accomplish this is to involve students as partners in the assessment process.

Students are involved at different levels of the assessment process: starting with very superficial involvement, each level brings the student further into the actual assessment equation. Students can do the following:

- take the test and receive the grade
- be invited to offer the teacher comments on how to improve the test
- suggest possible assessment exercises
- develop assessment exercises
- assist the teacher in devising scoring criteria
- create the scoring criteria on their own
- apply scoring criteria to the evaluation of their own performance
- come to understand how the assessment and evaluation processes affect their own academic success
- come to see how their own self-assessment relates to the teacher's assessment and to their own academic success

Perhaps the greatest potential value of classroom assessment is realized when we open the assessment process up and welcome students into that process as full partners. Please understand that I do not simply mean having students trade test papers or homework assignments so they can grade each other's work. That's strictly clerical stuff. This concept of full partnership goes far deeper.

Students who participate in the thoughtful analysis of quality work so as to identify its critical elements or to internalize valued achievement targets become better performers. When students learn to apply those standards so thoroughly as to be able to confidently and competently evaluate their own and each other's work, they are well down the road to becoming better performers in their own right.

—The Critical Role of Assessment Literacy

Considered together, these seven guiding principles form the foundation of the assessment wisdom all educators must master in order to manage classroom assessment environments effectively. Thus, in a sense, they underpin classroom assessment competence.

Those teachers who are prepared to meet the challenges of classroom assessment understand that they need to do their assessment homework and be ready to think clearly and to communicate effectively at assessment time. They understand why it is critical to be able to communicate their expectations to their students and their families and why it is essential that assessments be done well and also accurately reflect achievement expectations.

Well-prepared teachers realize that they lie at the heart of the assessment process in schools and they take that responsibility very seriously. Unfortunately, as a society and as a community of professional educators, we have not supported teachers over the decades in their preparation to fulfill this responsibility. But this is changing, as professional development in assessment is becoming an increasingly prominent educational priority.

Competent teachers understand the complexities of aligning a range of valued achievement targets with appropriate assessment methods so as to produce information on student achievement that both they and their students can count on to be accurate. They understand the meaning of sound assessment and they know how to use all of the assessment tools at their disposal to produce accurate information.

Effective classroom assessors-teachers understand the interpersonal dynamics of classroom assessment and know how to set students up for success, in part through using the appropriate assessment as a teaching tool. They know how to make students full partners in the processes of defining the valued outcomes of instruction and transforming those definitions into quality assessments.

As teachers bring students into the assessment process, thus demystifying the meaning of success in the classroom, they acknowledge that students use assessment results to make the decisions that ultimately will determine if school does or does not work for them. Our collective classroom assessment challenge is to be sure students have the information they need, in a form they understand, and in time to use it effectively.

Principles adapted from Student-Centered Classroom Assessment, Richard J. Stiggins, 1997

—Washington State Classroom Assessment Competencies for Teachers

1. Teachers must be competent masters of each of the achievement expectations they hold as important for their students. That mastery must be to a sufficient level of understanding for teachers to be able to translate those expectations into quality assessments.

2. Teachers must understand all of the various purposes of assessment in schools and know how each level of assessment use (from classroom to building to district to state and beyond) impacts the quality of a student's schooling experience.

3. Teachers must understand and be able to apply standards of technical assessment quality.

4. Teachers must be able to identify an appropriate assessment method from among several available options, and they must be able either to (a) select previously developed assessments, or (b) design and develop new assessments that fit the contents.

5. Teachers must be able to store, retrieve and communicate assessment results to users of that information in a timely manner that assures complete and accurate understanding of those results on the part of all relevant users.

6. Teachers must know and be able to meet standards of professional (fair, legal and ethical) practice in conducting classroom assessment practices.

7. Teachers must understand and remain sensitive to the personal consequences of their assessments for their students and the families of those students.

Source—Washington Commission on Student Learning, Reprinted with permission

—Performance Assessment Design

Type of Authentic Assessment	Description of Authentic Assessment Strategies
Project	• hands-on demonstration of knowledge, skills and attitudes that reveals a student's ability to plan, organize, and create a product or an event
	• documentation of process of development from initial steps to final presentation
Portfolio	• collection of pieces of evidence of a student's knowledge, skills, and attitudes
	• showcase of best work, work in progress
	• record of student's progress over time
	• content selection by student in collaboration with the teacher
	• centerpiece for parent conferences
On-demand Demonstrations	• hands-on performance of student, which illustrates levels of knowledge, skills, and attitudes
	• typically involve a "real life" problem or situation to solve
	• focus on the application of knowledge and skills learned in one situation as it connects to a new and different one
Case Studies	• analysis of events and individuals in light of established criteria
	• synthesis of evidence to support generalizations based on individual cases
Paper/Pencil Tests	• multiple-choice, essay, true-false questions that rely on extended responses to further clarify a student's understanding of the knowledge being assessed
	• graphic representations that reveal a student's understanding of connections among ideas
Structured Observation	• observation of events, groups, and individuals that focuses on the salient traits of the skill or attitude being observed
Scenarios	• a problematic or challenging situation presented in the context of a career-technical context area
	• required study to analyze or evaluate a situation
	• apply relevant knowledge or skills
	• prepare and justify a reasonable solution
Critical Incident	• an interview where the assessee is asked to describe past experiences which demonstrate a skill standard

—Characteristics of Authentic Assessments

Adapted from Grant Wiggins with thanks to Ted Sizer, Art Powell, Fred Newmann, and Doug Archbald, and the work of Peter Elbow and Robert Glaser.

Structure and Logistics

1. Do not rely on unrealistic and arbitrary time constraints.
2. Offer known, not secret, questions or tasks or demonstrations
3. Require some collaboration with others.
4. Recur—and are worth practicing for, rehearsing, and retaking.

Intellectual Design Features

1. Are "essential"—not needlessly intrusive, arbitrary, or contrived to "shake out" grades.
2. Are "enabling"—constructed to point the student toward more sophisticated use of the skills or knowledge.
3. Are contextualized, complex intellectual challenges, not "atomized" tasks, corresponding to isolated "outcomes."
4. Involve the student's own research or use of knowledge, for which "content" is a means.
5. Assess student habits and repertoires, not mere recall or plug-in skills.
6. Are *representative* challenges—designed to emphasize *depth* more than breadth.
7. Are engaging and educational.
8. Involve somewhat ambiguous tasks or problems.

Grading and Scoring Standards

1. Involve criteria that assess essentials, not easily counted (but relatively unimportant) errors.
2. Are *not* graded on a "curve" but in reference to performance standards (*criterion-referenced*, not norm-referenced).
3. Involve demystified criteria of success that appear to students as inherent in successful activity; based on published skill standards.
4. Make self-assessments a part of the assessment.
5. Use a multifaceted scoring system instead of one aggregate grade.

Fairness and Equity

1. Ferret out and identify (perhaps hidden) strengths.
2. Strike a constantly-examined balance between honoring achievement and native skill or fortunate prior training.
3. Minimize needless, unfair, and demoralizing comparisons.
4. Allow appropriate room for student learning styles, aptitudes, and interests.
5. Can be—should be—attempted by *all students* with the test "scaffolded up," not "dumbed down," as necessary.
6. Reverse typical test-design procedures: they make "accountability" serve student learning. (Attention is primarily paid to "face" and "ecological" validity of tests.)

—Key Differences between Typical Tests and Authentic Tests

Typical Test	*Authentic Tasks*	*Indicators of Authenticity*
Require correct responses only.	Require quality product and/or performance, and *justification*.	We assess whether the student can explain, apply, self-adjust, or justify answers, not just the correctness of answers using facts and algorithms.
Must be unknown in advance to ensure validit	Are known as much as possible in advance; involve excelling at predicta demanding and core tasks; are not "gotcha!" experiences.	The tasks, criteria and standards by wh work will be judged are predictable or known.
Are disconnected from a realistic context and realistic constraints.	Require real-world use of knowledge: the student must "do" retailing, child care, information technology, etc., in realistic simulations or actual use.	The task is a challenge and a set of constraints that are authentic—likely to be encountered by the professional, citizen or consumer. (Know-how, not plugging in, is required.)
Contain isolated items requiring use or recogniti of known answers or skil	Are integrated challenges in which knowledge and judgment must be innovatively used to fashion a quality product or performance.	The task is multifaceted and non-routine, even if there is a "right" answer. It thus requires problem clarification, trial and error, adjustments, adapting to the case or facts at hand, etc.
Are simplified so as to be easy to score reliably.	Involve complex and non-arbitrary tasks, criteria, and standards.	The task involves the important aspects of performance and/or core challenges of the field of study, not the easily scored; does not sacrifice validity for reliability.
Are one-shot.	Are iterative: contain recurring essen tasks and standards.	The work is designed to reveal whether the student has achieved real versus pseudo mastery, or understanding versus mere familiarity, over time.
Depend on highly technical correlations.	Provide direct evidence of skill standards.	The task is valid and fair on its face. It thus evokes student interest and persistence, and seems apt and challenging.
Provide a score.	Provide usable, diagnostic (sometimes concurrent) feedback. The student is able to confirm results and self-adjust as needed.	The assessment is designed not merely to audit performance but to impro future performance. The student is seen as the primary "customer" of information.

—What Feedback Is and Is Not

Effective Feedback	*Ineffective Feedback*
Provides confirming (or disconfirming) useful evidence of effect relative to intent, for example, a map and road signs; compares work to anchor papers and rubrics.	Provides nonspecific advice, praise/blame, or exhortations, for example, "Try harder," "Your writing is awful," or "Good job!"—a mere score on the paper.
Compares current performance and trend to successful result (standard), for example, the taste and appearance of the food, not the recipe, guarantee the meal will come out as described; student work is compared against exemplars and criteria.	Naively assumes that *process* (instructions, hard work, and advice) is sufficient to reach goal, for example, planting seeds and diligently watering according to package directions does not ensure a successful garden; students given only directions on how to complete assignment, not guidance on specific standards of final products.
Timely, immediate or performer-friendly in its immediacy, such as feedback from audience and conductor during a recital.	Not timely: too long a delay in usability, or too late to use; feedback on a standardized test provided weeks later, in the summer.
Frequent and ongoing.	Infrequent, given once.
Descriptive language predominates in assessing aspects of performance; for example, you made a left turn onto Main Street instead of a right turn; rubrics describe qualities of performance using concrete indicators and traits unique to each level.	Evaluative or comparative language predominates in assessing performance; for example, you made many correct turns and one incorrect turn, or your navigating is greatly improved and better than that of most of your peers; rubrics basically amount to "excellent," "good," "fair," and "poor," with no insight into the characteristics that lead to such value judgments.
Performer perceives a specific, tangible effect, later symbolized by a score that the performer sees is an apt reflection of the effect, such as the score given by a band judge in competition, based on specific criteria; the grade or score confirms what was apparent to the performer about the quality of the performance after it happened.	No tangible effect or useful result is visible to the performer other than a score, such as a grade at the top of a paper handed back; the evaluation process remains mysterious or arbitrary to the performer, no matter how valid and reliable the test and score are to the expert.
The result sought is derived from true models (exemplars); for example, a first grade evaluation of reading is linked to the capacities of a successful adult reader: the reading rubric is longitudinal and anchored by expert reading behaviors; feedback is given in terms of the goal, such as the specific accomplishments of those who effectively read to learn.	The result sought is derived from a simplistic goal statement; for example, the feedback to first grade readers relates only to checklists: the reading rubric is limited to age-grade skills; there is too much feedback in terms of learning to read, not enough in terms of reading to learn.
Enables performers to improve through self-assessment and self-adjustment.	Keeps the performers constantly dependent on the judge to know how they did.

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Section V

Performance Assessment in the Workplace

—Skill Standards: Performance Assessment in the Workplace—Graham Debling, Consultant

Introduction

Skill standards describe outstanding performance in the workplace or, more accurately, the skills and knowledge which contribute to outstanding performance. Frequently, the workplace provides an excellent context to learn and demonstrate the skills and knowledge associated with the skill standards. Indeed, sometimes it is very difficult, or too expensive, to provide opportunities to develop and demonstrate these skills and the application of the knowledge outside of the workplace.

The workplace also offers attractions as an environment for learning that is not necessarily explicitly linked to the skill standards. The real-life application of knowledge and skills can re-enforce and extend classroom-based learning. Additionally, for some learners who are preoccupied with enhancing employability, the workplace can provide the motivation to learn.

What is to be learned and demonstrated in the workplace will vary between groups of learners, reflecting the different reasons why learning is being fostered or has occurred in this context. This can influence who decides what is to be assessed, who is best placed to contribute to and undertake the assessment, and how the quality of the assessment activity is assured. Both facilitating and assessing learning in the workplace poses new challenges. This paper explores these challenges specifically with respect to assessment and points towards possible solutions. It also suggests how assessment in the workplace can enhance learning.

The assessment process

There are seven stages associated with assessment to skill standards.

The Seven Stages of Assessment to Skill Standards

1. Identifying **why** assessment is to happen
2. Deciding **what** is to be assessed
3. **Specifying or identifying the criteria** against which the evidence is to be judged
4. **Collecting evidence** of what the learner knows and can do
5. **Assessing that evidence against criteria** which reflect the purpose of the assessment
6. **Providing feedback** to the learner and **recording conclusions or outcomes**
7. **Ensuring consistency** through quality assuring judgements and processes

The actual assessment process consists of the fourth and fifth stages listed above:

4. Collecting evidence of what the learner knows and can do
5. Assessing that evidence against criteria which reflect the purpose of the assessment

The reliability one can attach to the outcomes of assessment depends on the process being technically sound and consistent. Technically sound assessment depends on the evidence being valid, sufficient, current and authentic. Consistency reflects the extent to which different assessors, reviewing different evidence, at different times and places, come to sufficiently similar conclusions regarding its adequacy.

However, if the first three stages—1. Being clear about why assessment is to happen, 2. Deciding what is to be assessed, and 3. specifying or identifying the criteria against which evidence is to be judged—are not addressed, it is unlikely the assessment will serve the purpose for which it is to be undertaken.

Without the last two stages—6. Providing feedback to the learner and recording conclusions and outcomes, and 7. Ensuring consistency through quality assuring judgements and processes—there is a risk that the assessment will have limited value.

Why assessment may be undertaken?

Assessment is usually undertaken to:

- support subsequent learning (formative assessment) and/or
- measure, record and recognize what has been learned (summative assessment)

Formative assessment should characterize any well-planned learning activity. It is both about identifying what is already known and can be done and identifying further learning needs and goals. It can happen before, during, and at the end of a planned learning activity. Ultimately, formative assessment is primarily a service to the learner to help enhance the value of subsequent learning and learning activities.

Assessing learners to support subsequent learning is a fundamental role of teachers, instructors and trainers. It should also be a key role of team members, team leaders, supervisors and managers in the workplace in their interaction with team colleagues and with those for whom they are responsible.

However, the extent to which individuals in the workplace can undertake this role will depend very much on their knowledge and understanding of what is to be assessed. Regrettably, there is evidence that some organizations under-perform because supervisors and managers are not able to do this. They may not have a clear perception of what those they supervise should be doing, and/or clear and explicit criteria against which to measure performance, or the ability to communicate this information in a positive and constructive way. Under these conditions, the skill standards can clarify what should be done and how well, but there is a limit to the extent to which they can compensate for poor communication process skills. While many supervisors and managers can assess performance in work roles and identify how performance might be improved, they may not have the time or skills to identify specific underpinning skills and knowledge that need to be learned or enhanced.

The second purpose is often undertaken to advise third parties; i.e., people who may not be part of the learning and assessment processes such as future employers or providers of more advanced learning programs. An inaccurate or misinformed assessment may have adverse consequences for the learner and for others who give credence to the outcome. Under these conditions, there is a more pressing need to ensure the technical integrity of the assessment process and the accuracy and consistency of associated judgments.

What is to be assessed?

Assessment in the workplace is assuming increased significance because of a growing emphasis on:

- learning knowledge and skills of importance therein,
- recognizing the skills and knowledge that have been demonstrated in the workplace
- its potential to illustrate and re-enforce what is taught in the classroom, and
- its potential to motivate some learners

However, these different reasons why learning in the workplace is valued and assessed carry different implications for who is best placed to contribute to the assessment process. Seagraves et al[8] have suggested a useful way of differentiating learning in the workplace.

Three Purposes for Learning at Work

- Learning ***for*** work
- Learning ***at*** work
- Learning ***through*** work

Each of the three purposes is likely to be associated with different groups of learners. However, skill standards can and are being used both as learning goals and as catalysts to identify other learning goals relevant to each purpose.

- *Learning **for** work* refers to learning in order to enhance the performance of organizations through improving the performance of the learner in work roles. Specific occupational and professional training are good examples of this.

- *Learning **at** work* refers to learning that occurs in the workplace, as a result of normal work activities, but not as part of a pre-meditated learning process. Generally, what has been learned is assessed at some time after it has occurred. *Learning **at** work* might be assessed for academic or education purposes. This might be to equate it with learning out of work (often with learning in education), to give academic credit, or facilitate access to education-delivered or directed learning opportunities. Within the workplace, *learning*

[8] Seagraves, L., Osborne, M., Neal, P., Dockrell, R., Hartshorn, C. and Boyd, A. (1996) *Learning in Smaller Companies (LISC) Final Report.* University of Stirling: Educational Policy and Development

***at** work* might be assessed to gain insight into the potential to fulfill other roles. Skill standards can provide useful insight to that which may have been learned in the workplace.

- *Learning **through** work* refers to using the workplace as an experiential learning opportunity to pursue some learning goal other than for work-specific purposes. It may be associated with educational or personal goals. It may be used to re-enforce and extend learning delivered in contexts other than the workplace. The enhancement of broad-based skills, re-enforcing academic subjects both through their application and through observing their application and using the workplace as a milieu to develop research skills are all examples of *learning **through** work* that is not *learning **for** work*. Skill standards can indicate where work practices can exemplify and extend and re-enforce learning not specific to work and, therefore, may indirectly influence the educational curriculum.

What criteria will be applied and who should decide what they are?

In the context of *learning **for** work,* the skill standards define both the skills and knowledge and the criteria against which learners may be judged. However, individual organizations may have additional or more specific criteria that reflect their own business aspirations, culture and structure.

Where prior *learning **at** work* is being assessed for purposes linked to education programs and credentials, what is to be assessed, and the criteria that will be applied, will be defined by those who have responsibility for the standards in the educational context. In such situations, the skill standards will not define the criteria, except where the educational goals have been derived directly from them. Where assessment is to determine potential for new work roles, the workplace is likely to set the criteria but the skill standards may well inform or illustrate the criteria that are applied.

Where opportunities for *learning **through** work* are being used to complement, extend or re-enforce learning away from the workplace, criteria are likely to be defined by those who are providing or directing the learning program and are derived from program goals. The criteria may be derived from or influenced by skill standards where they provide insight into what might be *learned **through** work*.

Collecting evidence

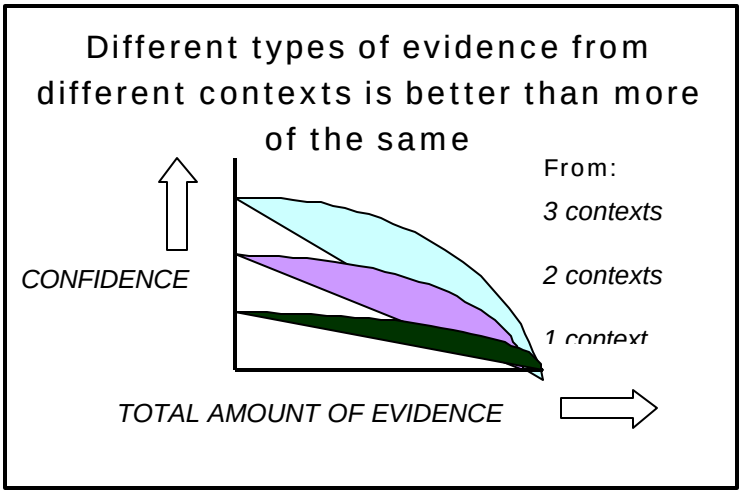
It has already been noted that if assessment is to be technically sound, there are four requirements of the evidence.

To be technically sound, evidence must be:

- **Valid**
  i.e. it relates to what is being assessed
- **Sufficient**
  i.e. we can be confident about the conclusions that are drawn
- **Authentic**
  i.e. it reflects the knowledge and skills of the learner and not somebody else
- **Current**
  i.e. the learner has the knowledge and skills of today

Increasingly, we are concerned that individuals can apply knowledge and skills. Indeed the skill standards are very much about **application** in work settings. Generally, the more diverse and valid evidence we

have, the more confident we can be about the knowledge and skills owned by an individual and his or her ability to apply them.



Evidence can be derived from different sources.

Products are tangible and, frequently, can be kept for quality assurance checks. Actions and behaviors are transient and, while visual records of specific occasions may be collected, more often the person who judges the evidence is dependent on reports of actions and behaviors provided by others.

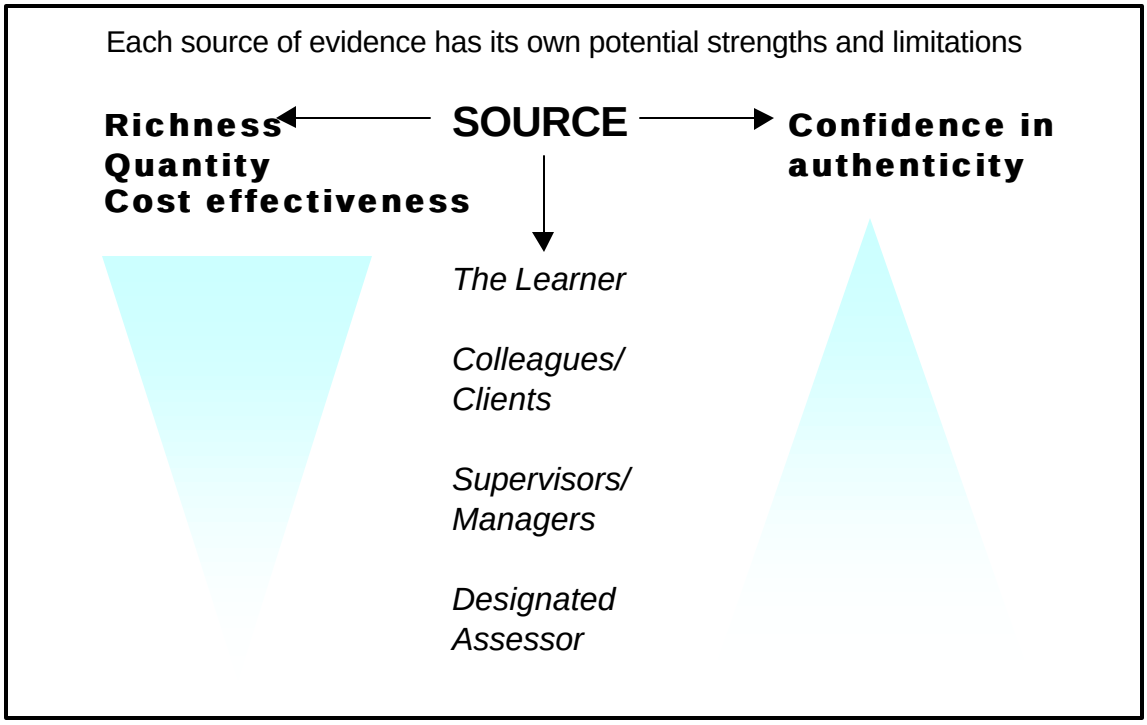
Different sources of evidence

- Products
- Actions
- Behaviors

Four different sets of people are in a position to collect or provide evidence of an individual's ability to apply knowledge and skills in the workplace:

1. A recognized or designated assessor not directly involved in the individual's daily work activity
2. A workplace supervisor or manager
3. Work colleagues, clients and customers
4. The learner

The amount and diversity of evidence each group can collect or provide varies, as does the cost of collecting the evidence, and the extent to which the person who judges the evidence can be confident in the authenticity of evidence from individuals within the different sets.



Combining evidence from different sources can potentially maximize richness and confidence in its authenticity while minimizing cost. The principle of triangulation, collecting evidence from three sources, has much to recommend it.

However, learners, colleagues and clients, managers and supervisors can only contribute to the collection of evidence if they are clear about what is to be assessed, the criteria that are to be applied and what might constitute sufficient and valid evidence. This might limit the extent to which evidence can be collected by or through colleagues, clients and customers or by or through workplace supervisors and managers. Additionally the values displayed by an organization, particularly with respect to learning, may also facilitate or limit the extent to which colleagues, supervisors and managers can, or are willing, to contribute.

On the other hand, information about criteria and the nature of evidence is of critical importance to the learner. Without it, she or he cannot reflect on learning (critical to deep learning) or monitor progress and identify learning needs. Without it, the learner is forced into dependency on others rather than having the opportunity to become a confident, independent learner. Having this information is as important to learning as it is to self-assessment.

In many workplaces, there is considerable scope to enhance learning at the same time as facilitating the collection of evidence. Empowering and requiring the learner to collect evidence, including evidence from colleagues, clients, customers, supervisors and managers, will enhance learning. Colleagues, supervisors and managers, in particular, are well placed to verify that the evidence collected is authentic and provides a fair reflection of what the individual has demonstrated in the workplace. However, while verification is useful in confirming authenticity, it does not enhance the quality of the evidence in other respects.

Those who have final responsibility for judging or assessing the evidence can also check its authenticity through further sampling; for example, through the application of oral challenging and other forms of tests. Sometimes it is not clear that such a step warrants the costs involved but it can enhance the public credibility of the assessment process.

Collecting evidence in the context of *learning <u>for</u> work*

Learners are in a prime position to collect evidence of *learning **for** work* and their learning can be enhanced through doing so. However, as a general rule, organizations stand to benefit most and most directly from *learning **for** work;* it is about enhancing the performance of individuals in work roles. Because of the potential returns, it is for *learning **for** work* that organizations are most likely to be willing for colleagues, supervisors and managers to play a part in the collection of evidence and to be trained to do so. Further, because what is to be learned pertains directly to enhancing performance in the workplace, it is more likely that those employed therein will have a deeper understanding of what is required and more readily internalize the standards.

In many situations, there will be mechanisms in place to provide feedback from customers (internal or external to the organization) to individuals and teams. Additionally, internal systems to monitor performance characteristics such as productivity, quality, lost opportunities, etc. might provide authentic and valid evidence. But it is not always possible to attribute this evidence to an individual.

There may also be aspects of skill standards for which learning and assessment opportunities are limited in the workplace. For example, most organizations try to design out problems and minimize their impact when they occur. This may limit the opportunities for an individual to learn and display problem-solving skills. Similarly, there may be a need to purposefully create opportunities for extended team work if an individual otherwise would not be with a group for sufficient time to establish an identity within the team. So, even where learning is for work, it may be impractical to collect all of the evidence required in the workplace.

Collecting evidence in the context of *learning <u>at</u> work*

For the purposes of this paper, *learning **at** work* is defined as learning that occurs in the workplace, as a result of normal work activities, but not as part of a pre-meditated learning process. Generally, the reason for collecting evidence of the learning arises some time after it has occurred. Clearly, where this is the case, there will be issues of currency to be addressed. Generally, the individual is in the pivotal position to interpret the expectations and to identify evidence from the workplace and other sources.

Often the evidence may have accumulated over an extended time scale increasing the possibility that no one person is in a position to authenticate or verify it. However, extended time scales can mean there is a surfeit of diverse evidence, not all of which is particularly valid. Learners may need more assistance to determine the relative value of different sources of evidence and coaching in how to present it in a concise and cogent form that facilitates the judgement process.

In principle, the evidence can be verified or authenticated by others associated with the workplace. However, where evidence comes from past activities, the learner may not be able to locate individuals who have a clear recollection of what was demonstrated. While many

colleagues may be only too happy to help an individual in his or her endeavors, the probability of the activity of verification or authentication being undertaken thoroughly, and with integrity, is likely to be less than in the context of *learning **for** work*.

In summary, it is probable that those who assess evidence of *learning **at** work* will find it necessary to implement more extensive processes to check the authenticity and currency of evidence. Oral challenging of the individual is often the most cost-effective way of checking authenticity and currency. Simulations, theoretical case studies and skill tests can also be useful in checking authenticity.

Collecting evidence in the context of *learning <u>through</u> work*

In this context, learning and assessment are relatively current, so it is unlikely that currency of evidence will be an issue. On the other hand, the learning goals may not link explicitly or directly to the goals of the organization, so workplace colleagues, supervisors and managers do not necessarily have a clear framework of reference that is relevant to their day-to-day responsibilities. While they may be comfortable in confirming in general terms what has been done and the display of work specific and broad-based skills, it is less likely they will be able to differentiate different levels of performance to the degree that may be the norm in educational settings.

Again, the learner has the potential to be the best source of evidence, but she or he will require considerable preparation if the opportunity is to be fully used. Workplace colleagues should be able to confirm in general terms that which has been demonstrated. However, frequently, it will be best to use this evidence to qualify or confirm that which has been collected in other settings outside the workplace.

Involving the learner

In each of the purposes for *learning **at** work* discussed above, it is apparent that there are potential benefits to be derived from purposefully enabling, empowering and requiring the learner to be involved in the collection of evidence.

Involving the learner in the collection of evidence can:

- reduce the cost of assessment
- considerably enhance the richness of evidence
- enhance the speed and depth of learning
- foster independence in learning

Who should assess the evidence?

Who assesses the evidence is linked to the purpose of the assessment. When it is to support further learning, it is important that the learner has an opportunity for self-assessment. Through this, he or she is more likely to accept the findings and the implications for further learning.

When the assessment is carried out to measure, record and recognize what has been learned, it is important that the assessor is accountable to the organization or group that is to provide formal recognition for what has been learned. The credibility attached to any record will, in the long term, depend on the technical soundness and consistency of the assessment process, the probability of the record being a fair reflection of what the individual knows and can do.

The assessor needs to have a sound understanding of the standard to be applied whether it is described by the skill standards criteria, has been derived from them, or reflects some education goal (when the skill standards have illustrated what might be learned but are not the ultimate learning goal). Because the outcomes of the assessment are to be used by third parties, it is important that the assessor be subject to the quality assurance processes operated by the organization that provides the recognition.

In the context of *learning **for** work,* it is quite possible that individuals in the workplace could assess the evidence. The ability of an individual in the workplace to assess evidence consistently will depend very much on the extent to which the organization has attempted to establish consistent standards of performance internally and has fostered or implemented regular standards-based staff evaluations. In some large companies with extensive internal training programs, there is confidence that judgements by supervisors and managers are made with sufficient consistency and mechanisms in place to sustain and build that consistency without a need to monitor their assessments.

However, where the record is to have status outside a particular organization, perhaps across a sector of employment, there are normally specific requirements of the assessor.

The requirements of individuals
who are assessing learners for the purposes of
recognizing what has been learned are:

- a clear knowledge of the standards
- an ability to judge the validity, sufficiency, authenticity and currency of diverse evidence
- an ability to judge with adequate consistency, both internally and with other assessors

The recording organization may place requirements on the workplace that might relate to the training of the assessors, their participation in training workshops with assessors from other organizations, internal quality assurance, record keeping and submission to external quality assurance. Should the recording organization have cause to doubt the effectiveness of

assessment within an organization, it can withdraw recognition. It is through this power that it can seek to protect the credibility of the record.

It is also possible for the assessor to be external to the workplace. However, this places additional requirements on ensuring the authenticity of the evidence as in the context of *learning **at** work.*

In the context of both *learning **at** work* and *learning **through** work,* the provider of the record is often an education or training institution. As for *learning **for** work*, the institution will want to assure the continuing credibility of the record. This is most easily ensured if an employee of the institution, who is subject to its internal quality assurance procedures, undertakes the assessment of the evidence.

Who provides feedback to the learner and records achievement?

Normally this role falls to the learning facilitator. However, if the learner is empowered and encouraged to assess and reflect on her or his performance, the provision of feedback may be considerably simplified and learners can take some of the responsibility for keeping records. Evidence suggests that learners who are empowered to assess themselves are frequently more rigorous and demanding in their expectations than assessors and learning facilitators.

Frequently, where individuals are learning to apply knowledge and skills there is little separation between assessing to support learning and assessing to recognize what has been learned, between formative and summative assessment. Indeed, once formative assessment (assessment to determine further learning needs) indicates that the individual has demonstrated the skills and knowledge that are to be recorded or acknowledged through the award of credit or credential, there should be sufficient current and valid evidence to meet the needs of summative assessment.

How is consistency ensured?

First it is perhaps worth noting that absolute consistency is not possible. The issue is to ensure that consistency is adequate for the purpose. The first step towards ensuring consistency is to express the standards in a clear and explicit form. However, to better assure consistency, there is a tendency to provide increasing levels of detail. This can be counter-productive for two reasons.

Providing increasing levels of detail to better assure consistency can be counter-productive for two reasons:

- The assessor cannot internalize all of the information and so is selective in what is applied
- Assessors resort to checklists emphasizing the constituent skills and knowledge and forgetting about the need to put them all together

The second step is to ensure that those who are charged with assessing to the standards share a common interpretation. This is best facilitated through the provision of training and networking between assessors.

The third step is to empower individual learners to assess themselves and thereby monitor and validate the judgements of assessors. The provision of clear and explicit standards go a long way towards enabling this but it is also useful to put in place mechanisms that encourage the provision of regular feedback to learners.

The fourth step is, where relevant, to encourage within organizations that facilitate learning, networking between assessors, and the monitoring and analysis of assessment performance amongst the assessors. The goal should be to encourage consistency within an organization or within a group of organizations that are working together.

Fifth, and least effective, is the external monitoring of assessors. This may entail reviewing samples of evidence, interviewing and otherwise getting feedback from learners and monitoring the integrity of record keeping and internal quality assurance systems. However, frequently, external verification is most effective in assuring quality not through the process of checking but rather through initiating and facilitating networking and identifying and meeting the training needs of assessors.

Summary

Assessment in the workplace
introduces new challenges

These are probably best tackled through dividing up the process into different stages and examining how each can be most effectively addressed in the workplace context to serve the purpose for undertaking the assessment.

In most settings it would seem that the more extensive involvement of the learner offers the potential to

- reduce the cost of assessment in the workplace
- enhance the quality of assessment
- enhance learning

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Section VI

Developing Rubrics

—Creating Rubrics

Level of Performance	Effective a	Empathetic b	Reflective c
5			
4			
3			
2			
1			

The **Rubric** is an authentic performance assessment scale which is being increasingly used for measuring skill standards achievement since it is particularly useful in assessing per-formance criteria which are complex and subjective. How often have you attempted to grade your students' work only to find that the assessment criteria were vague and the performance behavior was overly subjective? Would you be able to justify the assessment or grade if you had to defend it?

Authentic assessment is geared toward assessment methods which correspond as closely as possible to real world experience. It was originally developed in the arts and apprenticeship systems, where assessment has always been based on performance. The instructor observes the student in the process of working on something real, provides feedback, monitors the student's use of the feedback, and adjusts instruction and evaluation accordingly. Authentic assessment takes this principle of evaluating real work into all functions, tasks, knowledge, abilities and skills embedded in the skill standards.

The rubric is one authentic performance assessment tool which is designed to simulate real life activity where students are engaged in solving real-life problems. It is a formative type of assessment because it becomes an ongoing part of the whole teaching and learning process. Students themselves are involved in the assessment process through both peer and self-assessment. As students become familiar with rubrics, they can assist in the rubric design process. This involvement empowers the students and as a result, their learning becomes more focused and self-directed. Authentic performance assessment, therefore, blurs the lines between teaching, learning, and assessment.

The **advantages** of using rubrics in performance assessment are that they:

- allow assessment to be more objective and consistent
- focus the teacher or evaluator to clarify his/her criteria in specific terms
- clearly show the student how their work will be evaluated and what is expected
- promote student awareness of the criteria to use in assessing peer performance
- provide useful feedback regarding the effectiveness of the instruction
- provide benchmarks against which to measure and document progress
- maintain focus on skill standards
- ensure accountability

Rubrics can be created in a variety of forms and levels of complexity; however, they all contain common **features** which:

- focus on measuring a stated **objective** (standard, performance, behavior, or quality)
- set a **range** to rate performance
- contain specific performance characteristics arranged in levels indicating the **degree** to which a standard has been met

—Modified from http://edweb.sdsu.edu/truton/july/Rubrics_for_Web_Lessons.html

—Writing Rubrics for Skill Standard Performance Criteria

Here is one way to write a rubric based on the performance criteria embedded in Skill Standards.

The Process—A prerequisite to writing a good rubric is developer certainty that the performance criteria are very clear, easy to understand, and that each criteria has been verified by occupational professionals. When these have been established, consider the following steps:

1. For each criteria, decide **what qualifiers will be used** to describe that criteria. For example, if a criteria of problem clarification is, "asks questions relative to the problem at hand," what qualifiers will we be concerned about in terms of asking. Will we want quantity (i.e., the more questions, the better)? relevance (the questions asked directly relate to the problem)? scope (the questions cover all the parts of the problem)? It is important that these qualifiers be identified because they will be used for each level of the rubric. Limit the number of qualifiers (no more than two per indicator, and one is better) or your rubric will be too confusing.

2. Record the performance criteria in the skill standard as the **exemplary performance** relative to the identified criteria in the rubric. Do not introduce new variables into the description that are not stated in the rubric. If you do introduce new variables and believe them to be important, revise the rubric. Try very hard to keep your descriptions observable. Say, "maintains eye contact," not "listens well." Say something like, "no put down; uses names; acknowledges contribution of others" rather than "treats others with respect." Say, "Others took some action based upon participant's direction," rather than "Others responded well."

Too many criteria will lead to a convoluted rubric and too few will result in a set of perfunctory descriptions. Try to limit the number to between four and six. Typically you won't identify the "right" ones immediately. Considerable discussion and rewriting will be necessary.

3. Put the results of Step 1 in writing. Try to keep the description to 6-8 lines, but be clear.

4. Decide how many levels of scoring (e.g., exemplary; commendable; adequate; etc.) would provide a good continuum of performance. Describe the exemplary performance before you determine how many levels you need.

5. Using the same indicators and qualifiers as for the exemplary description, describe a satisfactory or acceptable performance. This will be the level just above the cut between the satisfactory and less than satisfactory. This is more difficult since the performer may do one thing quite well and another rather poorly. Do not be concerned with that. Just describe the performance for each of the indicators. Put this description in writing.

6. Following the same pattern, describe one level below satisfactory. What would achievement look like that would be close, but still less than satisfactory?

7. Complete the remaining descriptions based upon the number of scoring levels, being certain to use the same assessment criteria.

—Modified from http://www.lacoe.edu/pdc/second/assessment.html

—Building a Rubric

- Clearly define your purpose
- Review the skill standards that the unit covers
- Review the performance criteria that will be used to judge the student's product or performance
- Make a frame by deciding on the major tasks, skills and knowledge the rubric will address
- Describe the four or five different levels of performance that match each criterion. Choose words or phrases that capture the actual differences among the levels of performance.
- Test the rubric with students to see that it is understandable. (Once students gain experience with rubrics, they can help construct them.)
- Keep track of the strengths and shortcomings of the rubric when you use it to judge student work.
- Revise the rubric as necessary.

—Modified from http://www.servtech.com/public/germaine/rubric.html

—Designing Skill Standard Rubrics with Students

Activity Summary

Establishing a common understanding of the performance assessment process and allowing students to participate in creating their own assessment standards are important components of Skill Standard or project-based learning. Student-created rubrics emphasize student decision-making, collaborative learning, performance-based assessment, and "real world" connections. Rubrics can be used for planning and assessment by students and teachers throughout the project and as tools for measuring skill standards.

Materials

- Sample rubrics
- Project examples showing a range of performance, achievement, and accomplishments
- A place to write for all to see (overhead transparency, white board, chart paper, etc.)
- Skill Standard documents

What to Do

1. **Familiarize students with the concept of a rubric.** Begin by posting or distributing copies of rubrics for students to read. Make available skill standards-based projects which can be assessed using one or more of these rubrics. Allow students time to read through and view the rubric samples.
2. In groups, **assess projects using the rubrics**. Ask the students in each group to evaluate the samples, come to a decision on an appropriate score, and be prepared to explain their assessment to the class. Questions for discussion:

- How difficult was it for the group members to reach a consensus? What areas, if any, did group members disagree on or find confusing? How did they resolve the problems they encountered?
- What would have to be changed in each project or media sample for it to receive a higher or a lower score?
- How could the rubric being used be changed to better fit the projects or media samples being assessed?

3. As a class, teachers and students prepare a rubric that they will use for their upcoming projects based on skill standards. Teachers will have assessment criteria, constraints, and values they would like represented in the rubric which they should discuss with the class. (For example, how will the projects be grounded in the curriculum? And what role do regional, state, and national standards play in the project and assessment, and how should these be reflected in the rubric?) Other questions for the teacher and the students to address while creating the rubric include:
    - How can the rubric incorporate or reflect the level of performance which is expected by businesses or the occupational profession?
    - Should there be one rubric for all projects or several variations for different types of projects or for groups with different goals?
    - Will the rubric be "holistic" (have a single score for the whole project) or will there be scores for different aspects of the project?
    - How will "collaboration" and other components of the development process be incorporated into the rubric?
    - How will the rubric be used (in planning, design reviews, mid-point assessments, preparing and assessing a pitch, final evaluations, etc.)? And who will be the assessor (teachers, mentors, parents, business professionals, labor unions, classmates, the students working on the project, etc.)?
4. As the projects get underway and students, teachers, and mentors use the rubric (for planning, design, reviews, and other assessment activities), the class may want to assess **how well the rubric is working**. Questions for discussion:
    - Does each party feel comfortable using the rubric?
    - Are there minor changes that need to be made to the rubric to make it work better?
    - Are the examples given still appropriate and clear to all involved
    - Do students have any other questions, suggestions, or concerns about using the rubric?

Variations

- Instead of breaking into groups, teachers may prefer to keep the class together for the whole activity, especially if working with very young students.
- Rubrics are used in many different settings in the real world. Teachers could expand the discussion on rubrics by bringing in examples used by corporations and other professionals.

—Modified from http://www.irl.org/challenge2000/PBLGuide/Activities/DesignRubric.html

—Building Rubrics:
Descriptive Terms for Specifying Differences in Degree

The following terms describing differences in degree may be useful when constructing evaluation tools (rubrics, activity-specific keys) for performance assessments.

Degrees of Understanding

- thorough/complete
- substantial
- partial/incomplete
- misunderstanding/serious misconceptions

Degrees of Development

- exemplary
- accomplished
- developing
- beginning

Degrees of Proficiency

- expert
- advanced
- intermediate
- novice

Degrees of Achievement

- advanced
- proficient
- basic
- limited

Degrees of Frequency

- usually/consistently
- frequently
- sometimes
- rarely
- never

Degrees of Performance Level

- distinguished
- proficient
- apprentice
- novice

Degrees of Effectiveness

- highly effective
- effective
- moderately effective
- minimally effective
- ineffective

Degrees of Competency

- Level 5
- Level 4
- Level 3
- Level 2
- Level 1

—Problem Solving Scoring Rubric

	Accurately identifies constraints or obstacles	***Identifies viable and important alternatives for overcoming the constraints or obstacles***	***Selects and adequately tries out alternatives***	***If other alternatives were tried, accurately articulates and supports the reasoning behind the order of their selection and the extent to which each overcame the obstacles or constraints***
4.	Accurately and thoroughly describes the relevant constraints or obstacles. Addresses obstacles or constraints that are not immediately apparent.	Identifies creative but plausible solutions to the problem under consideration. The solutions address the central difficulties posed by the constraint or obstacle.	Engages in effective, valid, and exhaustive trials of the selected alternatives. Trials go beyond those required to solve the problem and show a commitment to an in-depth understanding of the problem.	Provides a clear, comprehensive summary of the reasoning that led to the selection of secondary solutions. The description includes a review of the decisions that produced the order of selection and how each alternative fared as a solution.
3.	Accurately identifies the most important constraints or obstacles.	Proposes alternative solutions that appear plausible and that address the most important constraints or obstacles.	Puts the selected alternatives to trials adequate to determine their utility.	Describes the process that led to the ordering of secondary solutions. The description offers a clear, defensible rationale for the ordering of the alternatives and the final selection.
2.	Identifies some constraints or obstacles that are accurate along with some that are not accurate.	Presents alternative solutions for dealing with the obstacles or constraints, but the solutions do not all address the important difficulties.	Tries out the alternative, but the trials are incomplete and important elements are omitted or ignored.	Describes the process that led to the ordering of secondary solutions. The description does not provide a clear rationale for the ordering of the alternatives, or the student does not address all the alternatives that were tried.
1.	Omits the most significant constraints or obstacles.	Presents solutions that fail to address critical parts of the problem.	Does not satisfactorily test the selected solutions	Describes an illogical method for determining the relative value of the alternatives. The student does not present a reasonable review of the strengths and weaknesses of the alternative solutions that were tried and abandoned.

Figure 8-6
Sample Performance Assessment Rating Scales

Source: From *Assessing Student Outcomes Using the Dimensions of Learning Model* (pp. 79-80) by R. Marzano, D. Pickering, and J. McTighe, 1993, Association for Curriculum Supervision and Development. Reprinted by permission.

Sample Rubric

Project Collaboration Rubric

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Contribute					
Research and gather information	Does not collect any information that relates to the topic	Collects very little information—some relates to the topic	Collects some basic information—most relates to the topic	Collects a great deal of information—all relates to the topic	
Share information	Does not relay any information to teammates	Relays very little information—some relates to the topic	Relays some basic information—most relates to the topic	Relays a great deal of information—all relates to the topic	
Be Punctual	Does not hand in any assignments	Hands in most assignments late	Hands in most assignments on time	Hands in all assignments on time	
Take Responsibility					
Fulfill team role's duties	Does not perform any duties of assigned team role	Performs very little duties	Performs nearly all duties	Performs all duties of assigned team role	
Participate in conferences	Does not speak during conferences	Either gives too little information or information which is irrelevant to the topic	Offers some information—most is irrelevant	Offers a fair amount of important information—all of which is relevant	
Share equally	Always relies on others to do the work	Rarely does the assigned work—often needs reminding	Usually does the assigned work—rarely needs reminding	Always does the assigned work without having to be reminded	
Value Other's Viewpoints					
Listen to other teammates	Is always talking—never allows anyone else to speak	Usually doing most of the talking—rarely allows others to speak	Listens, but sometimes talks too much	Listens and speaks a fair amount	
Cooperate with teammates	Usually argues with teammates	Sometimes argues	Rarely argues	Never argues with teammates	
Make fair decisions	Usually wants to have things their way	Often sides with friends instead of considering all views	Usually considers all views	Always helps team to reach a fair decision	
				TOTAL	

—From http://www.remc11.k12.mi.us/rubric.html

—Rubric for Assessing Understanding

Meaningful	***Effective***	***In Perspective***	***Empathic***	***Reflective***
Sophisticated: an unusually penetrating, illuminating, elegant and/or novel account (story, theory, implication, connection, meaning, causal reasoning)	*Masterful:* fluent, flexible, efficient; able to use/adjust understandings well in diverse and difficult contexts	*Insightful and coherent:* a fully justified and qualified viewpoint; effectively critiques, encompasses other plausible views; takes the long and dispassionate critical view	*Mature:* disciplined; disposed, and able to see and feel what others see and feel; unusually open to and willing to seek out the odd, alien, or different	*Wise:* deeply aware of the boundaries of one's own and others' understanding; able to recognize one's own prejudices and projections
I*n-depth:* an atypical and revealing account, going well beyond what is obvious or what was explicitly taught; sees nuance, more subtle connections and implications; inventive thinking	*Skilled:* competent in using and adapting understandings in a variety of appropriate and demanding contexts	*Thorough:* a fully developed and coordinated critical view, with logically sound support; successfully addresses multiple perspectives; makes apt criticisms, discriminations, and qualifications	*Sensitive:* disposed to see and feel what others see and feel; open to the unfamiliar or different	*Circumspect:* aware of one's ignorance and that of others; aware of one's prejudices
Knowledgeable: an account that reflects some in-depth and personalized ideas; the student is making the work his/her own, going beyond the given	*Able:* limited but growing ability to be adaptive and innovative in the use of knowledge and skill	*Considered:* a reasonably critical and well-developed point of view, with adequate support; addresses other points of view	*Aware:* knows and feels that others see and feel differently, and is somewhat able to empathize with others	*Thoughtful:* generally aware of what he/she does and does not understand; aware of how prejudice and projection occur without awareness
Viable: an adequate and apt account, extending and deepening somewhat what was learned, is beginning to "read between the lines"; account is fairly black and white	*Apprentice:* relies on a limited repertoire of routines, able to perform well in only a few familiar or simple contexts	*Sketchy:* aware of different points of view and able to develop a view, but weakness in support and/or considering of other perspectives	*Maturing:* has some capacity and/or self-discipline to "walk in others' shoes," but is still primarily limited to one's own reactions and attitudes; puzzled or put off by different feelings or attitudes	*Unreflective:* generally unaware of his/her specific ignorance; generally unaware of how prejudgments color understanding
Naive: a superficial, literal, or crude account; more descriptive than analytical or creative; a re-statement of what was taught or read	*Novice:* can perform only with coaching and/or relies on highly scripted, singular "plug in" types of approaches	*Narrowly conceived:* unaware of differing points of view; prone to state facts or cite opinions without being able to support, defend, or explain them, a fragmentary of limited view	*Egocentric:* has little or no empathy, beyond intellectual awareness of others; sees things through his/her own ideas and feelings; ignores or is threatened or puzzled by different feelings,	*Innocent:* completely unaware of the bounds of his/her understanding and of the role of projection and prejudice in opinions and attempts to understand

attitudes, views

—Rubrics for a Socratic Seminar

	Conduct	***Leadership***	***Reasoning***	***Listening***	***Reading***
Excellent	Demonstrates respect, enthusiasm, and skill for the purpose of seminar: insight into important texts and ideas gain through the interplay of collaborative and personal inquiry into a text. Demonstrates in speech and manner a habitual respect for the text, reasoned discussion, and shared inquiry. Effectively contributes to deepening and broadening the conversation, revealing exemplary habits of mind.	Takes clear responsibility for the seminar's progress or lack of it. Takes stock of the overall direction and effectiveness of the discussion, and takes apt steps to refocus or redirect conversation and/or to cause others to rethink previous statements. Offers apt feedback and effective guidance to others. Takes steps to involve reticent participants and to ensure that unnoticed points are attended to.	Arguments are reasonable, apt, logical and substantiated with evidence from the text so as to consistently move the conversation forward and deepen the inquiry. The analyses made are helpful in clarifying complex ideas. Criticisms made are never ad hominem.	Listens unusually well. Takes steps routinely to comprehend what is said, is consistently attentive (as reflected in direct and indirect evidence). Later responses (actions, comments, and writings) indicate accurate and perceptive recall of what was said and by whom.	Conduct and written work indicate student has read the text carefully, is thoroughly familiar with the text's main ideas, can offer insightful interpretations and evaluations of it, is respectful of the text while also reading it critically, and has come prepared with thoughtful questions and reactions.
Good	Demonstrates in speech and manner an overall respect for and understanding of the goals, processes, and norms of reasoned discussion and shared inquiry. Participates to advance conversation and displays mature habits of mind, but may sometimes be ineffective in sharing insights, advancing inquiry, or working with others.	Is generally willing to take on facilitative roles and responsibilities. Either makes regular efforts to be helpful (in moving the conversation forward and/or including others in it) but is sometimes ineffective in doing so; or does not typically take a leadership role but is effective when does so.	Arguments are generally reasonable, apt, and logical. There may be some minor flaws in reasoning, evidence, or aptness of remarks, but the ideas contribute to an understanding of the text or of comments made by others. Criticisms are rarely ad hominem.	Listens well. Takes steps to comprehend what is said. Generally pays attention and/or responds appropriately to ideas and questions offered by other participants. Later responses involve accurate recall of what was said and by whom.	Conduct and written work generally indicate student has read the text carefully, grasps the main ideas, can offer reasonable (if sometimes incomplete or surface) interpretations, and has come with apt questions and ideas regarding the text.

—Rubrics for a Socratic Seminar (continued)

	Conduct	***Leadership***	***Reasoning***	***Listening***	***Reading***
Fair	Speech and manner suggest that the student misunderstands the purpose of the discussion and/or is undisciplined concerning seminar practices and habits of mind. May contribute, even frequently, to conversation but is ineffective due to opinionated, unclear, and/or inadequately explicit views.	Takes on facilitative roles and responsibilities infrequently and/or ineffectively. When taking on a leadership role, may misconstrue the responsibility by lobbying for favored opinions or speakers only, and/or by trying to close off discussion of diverse and unresolved views in favor of neat-and-clean premature closure.	Unsubstantiated or undeveloped opinions are offered more than sound arguments. Comments suggest that the student has some difficulty in moving beyond mere reactions to more thorough arguments, or difficulty in following the complex arguments of others (as reflected in questions asked and/or non sequiturs). Student may sometimes resort to ad hominem attacks instead of focusing on the critique of claims and arguments.	Does not regularly listen very well and/or is not always attentive, as reflected in comments and body language. Verbal reactions reflect an earlier difficulty or failure to listen carefully to what was said. Behavior may signify either that the student lacks effective note-taking strategies and/or does not grasp the importance of listening to different points of view and reflecting on them.	Comments indicate that the student may have read the text but has either misunderstood it (due either to difficulties in reading and/or assuming a stance that is too egocentric or present-centered) or has not put enough disciplined and focused effort into preparing for the seminar. Varying patterns of participation also suggest that the student's preparation is inconsistent.
Unsatisfactory	Speech and manner display little respect for an/or understanding of the seminar process. Student appears to lack essential habits of mind: is either routinely argumentative, distracting, and/or obstinate, or is disengaged—extremely reluctant to participate, even when called upon (to the point of making others feel the detachment).	Plays no active facilitation role of any kind, or actions are consistently counterproductive in that role.	Comments suggest that student has great difficulty with analytical requirements of seminar. Remarks routinely appear to be non sequiturs and/or so illogical or without substantiation as to be not followable by others. Student may often resort to ad hominem comments to text author and other students.	Does not listen adequately, as reflected in later questions or comments (for example, non sequiturs and repetition of earlier points as if they hadn't been spoken) and/or body language that is very suggestive of inattentiveness.	Student either is generally unable to make adequate meaning of texts or has generally come to class unprepared. The student may be unable to read complex texts and/or may not know or use disciplined strategies for understanding and taking notes on such texts.

Sample Rubric

Web Page Development Rubric

Level 1	Level 2	Level 3	Level 4	Level 5
Writing Process				
Difficult to understand, sentence fragments, bad structure, spelling, and other errors	Many errors but consistent line of thought	Easy to understand; perfect spelling; one or two grammar, syntax, or semantic problems	Same as Level 3, but no errors	Clear, concise, well-written on-line content
Web Page (HTML) Creation Skills				
No HTML formatting tags; text is not broken into paragraphs	Text is broken into paragraphs; headings are used; no other HTML tags	Headings; Title; Tags, such as preformatted text; styles; centering; horizontal lines; lists, etc.	Same as Level 3 plus images and hyperlinks to related material	Same as Level 4 plus at least two lists, images as hyperlinks, color or background image, frames, tables, or image map
Web Page Layout				
Layout has no structure or organization	Text broken into paragraphs and sections	Headings label sections and create hierarchy; some consistency	Hierarchy closely follows meaning; headings and styles are consistent; text, images, and links flow together	Consistent format; extends the information page-to-page; easy to read; attention to different browsers and their quirks
Navigation				
One page	One page with title bar added, heading, etc.	Two pages (or one page with links within page or to other resources); navigation between pages; links work	Three or more pages with clear order, labeling, and navigation between pages; all links work	Title page with other pages branching off, and at least four pages total; navigation path is clear and logical; all links work
Marketing Your School				
Basic school statistics	Basic school statistics, photos of school, activities	Shows school activities, calendar of events, curriculum, etc.	Creates a positive image of the school; shows what is happening in the school; gives a sense of the total school community	Level 4 plus site makes one feel they could want to attend this school; shows community partnerships; the school is welcoming, open, challenging; shows student achievement, etc.

—From http://www.remc11.k12.mi.us/rubric.html

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Section VII

Critical Incident Assessments

Critical Incident Performance Assessments

—Critical Incident Technique for Assessing Skill Standard Achievement

This form of performance assessment is often used for job interviews and assessment of work readiness based on internships, apprenticeships, or other work-based learning opportunities. An interview is designed to demonstrate particular key functions in a skill standard, by capturing an individual's performance in a particular context, including the setting, position, role, and responsibility.

After reviewing the occupational skill standard, the interviewee is asked to describe six critical incidents: three where he or she met or exceeded the standard and three where things did not turn out as expected. Because the interviewee is free to choose events, the interviewer collects information about the way in which the interviewee constructs the reality he or she experiences. The interviewer asks the participant to describe the context for each event, and then guides the interview with a series of questions and probes. These include:

- *What led you up to the situation?*
- *Who was involved?*
- *What tasks or key activities did you actually do?*
- *What were you actually thinking and feeling at the time?*
- *What was the final outcome?*

The interviewer records behaviors the interviewee believes to be critical (as opposed to having an observer record any and all behavior), and also probes the thoughts, feelings, and intentions the person had while performing. Thus, one can plausibly reconstruct actual behaviors or tasks performed, rather than interpretations or biased recollections of past behaviors. Interviewees interpret their behavior in light of the context and their intentions. Interviewers, typically select professionals or work-based learning supervisors, use the skill standard as a framework for assessing performance.

These interviews can provide rich, connected descriptions of performance that makes sense to educators, employers and the public. Performance examples stimulate questions about whether a particular performance is adequate given the situation, whether the student or professional has met the given skill standards.

—Behavior Based Interviewing for Assessing Skill Standard Achievement

What Exactly is Behavior Based Interviewing?

Behavioral based interviewing is a new style of interviewing that more and more companies and organizations are using in their assessing and hiring processes. The basic premise behind behavioral interviewing is this: ***The most accurate predictor of future performance is past performance in a similar situation.*** It provides a more objective set of facts to make employment decisions than other interviewing methods. Traditional interview questions ask you general questions such as "Tell me about yourself." The process of behavioral interviewing is much more probing and is directly related to expected performance standards.

Important Points About Behavior Based Interviewing

- Employers predetermine which skill standards are necessary for the job for which they are looking and then ask very pointed questions to determine if the candidate possesses those skills. To assess which skills the employer is seeking, talk with alumni, read the company literature carefully, review the industry standards, and listen closely during the company's information session.
- In the interview, your responses need to be specific and detailed. Tell them about a particular situation that relates to the question, not a general one. Tell them briefly the situation, what you did specifically, and the positive result or outcome. Frame it in a three-step process:
    - situation
    - action
    - result/outcome
- The interviewee tells a story for a few minutes, typically the interviewer will pick apart the story to try to get at the specific behavior(s) or demonstration of a particular skill standard. The interviewer can probe further for more depth or detail such as "What were you thinking at that point?" or "Tell me more about your meeting with that customer," or "Lead me through your decision process."
- Always listen carefully to the question, ask for clarification if necessary, and make sure you answer the question completely.
- Your interview preparation should include identifying examples of situations where you have demonstrated the behaviors for a given company. Also include the performance criteria for successful outcomes.
- Your resume will serve a good guide when answering these questions. Refresh your memory regarding your achievements in the past couple of years. Demonstration of the skill standards desired behaviors may be proven in many ways. Use examples from past internships, classes, activities, team involvements, community service and work experience. In addition, you may use examples of which you may be especially proud such as running a marathon, running for student body president, exhibiting paintings in an art show, climbing half of the high peaks in the Adirondacks, hiking across country, etc.

—Sample Behavior Based Interview Questions

These are often difficult questions to answer on the fly. Use this sheet to jot down examples of stories in your past that you would use to answer these questions. Careful preparation is the key to an effective behavioral interview. Participating in a behavioral mock interview is an excellent way to practice.

- Describe a situation in which you were able to use persuasion to successfully convince someone to see things your way.
- Describe an instance when you had to think on your feet to extricate yourself from a difficult situation.
- Give me a specific example of a time when you used good judgment and logic in solving a problem.
- By providing examples, convince me that you can adapt to a wide variety of people, situations and environments.
- Describe a time on any job that you held in which you were faced with problems or stresses that tested your coping skills.
- Give an example of a time in which you had to be relatively quick in analyzing customer requirements.
- Tell me about a time in which you had to use your written communication skills in order to get an important point across.
- Give me a specific occasion in which you conformed to a policy with which you did not agree.
- Give me an example of an important goal which you had set in the past and tell me about your success in reaching it.
- Describe the most significant or creative presentation which you have had to complete.
- Tell me about a time when you had to go above and beyond the call of duty in order to get a job done.
- Give me an example of a time when you were able to successfully communicate with another person even when that individual may not have personally liked you (or vice versa).

—Adapted from http://union.edu/career/CDC/CRH.HO.BI.html

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Section VIII

Employee/Student Self-Assessment Using Skill Standards

Employee/Student Self-Assessment Using Skill Standards

—Sample Employee Self-Assessment Using Skill Standards for a Cosmetologist—*Contributed by Noreen Bowdon and Kay Hirai*

Name _____ Date _____

Listed below are functions from the Skill Standards document which are essential to your job. Read the functions and tasks. Rate the importance of the task to your work and assess your performance effectiveness.

This task is		**I currently perform this task**	
5	Extremely important compared to other tasks	**5**	Extremely well compared to other tasks
4	Above average in importance	**4**	Above average compared to other tasks
3	Average importance	**3**	Average performance
2	Below average in importance	**2**	Need improvement
1	Least important compared to other tasks	**1**	Need significant improvement

Occupation Cluster Cosmetology

Function or Job Duty Serve Clients

Task		***Importance***	***Performance Level***
A1.1	Consult with clients to determine needs/preferences	_____	_____
A1.2	Conduct services in a safe environment and prevent the spread of infectious and contagious disease	_____	_____
A1.3	Implement time management strategies	_____	_____
A1.4	Develop and implement strategies to retain clients	_____	_____
A1.5	Assess customer satisfaction	_____	_____

Function or Job Duty Perform Business Operations

Task		*Importance*	*Performance Level*
B1.1	Sell professional salon products to customers		
B1.2	Maintain and assess income and expense records		
B1.3	Update and maintain client records		
B1.4	Perform inventory control		
B1.5	Handle money transactions		

Occupation Cluster Cosmetology

Function or Job Duty Provide Services

Task		*Importance*	*Performance Level*
C1.1	Safely use salon products while providing client services		
C1.2	Provide basic skin care service		
C1.4	Apply appropriate cosmetics to enhance a client's appearance		
C1.5	Perform a shampoo in preparation for hair treatments or styling		
C1.6	Provide a haircut in accordance with client's needs and expectations		
C1.7	Provide styling and finishing techniques		
C1.8	Conduct a color service		
C1.9	Perform hair relaxation and/or wave formation (perm) service		
C1.11	Perform hair removal service		

Function or Job Duty Problem Solve/Troubleshoot

Task		*Importance*	*Performance Level*
B1.1	Define problem		
B1.2	Assess and determine impact to internal/external systems/processes		
B1.3	Notify need to know personnel and/or clients		
B1.4	Seek options and determine solutions		
B1.5	Discuss solutions with all stakeholders and implement		
B1.6	Assess outcome		
B1.7	Develop and implement corrective preventive action plan if needed		

Occupation Cluster Cosmetology

Function or Job Duty Coordinate Salon Function

Task		***Importance***	***Performance Level***
A1.1	Greet client	_____	_____
A1.2	Orient new salon client	_____	_____
A1.3	Perform customer service relations	_____	_____
A1.4	Schedule customer appointments	_____	_____
A1.5	Sell professional salon products to customers	_____	_____
A1.6	Handle money transactions	_____	_____
A1.7	Perform daily bookkeeping	_____	_____
A1.8	Update and maintain client list	_____	_____
A1.9	Distribute mail	_____	_____
A1.10	Perform inventory control	_____	_____
A1.11	Handle and process telephone communication	_____	_____

—Self Assessment of Foundational or Employability Skills

1. Problem Solving Skills Inventory

Assess your capabilities in each of the skills listed according to this scale:

1. I have not done this yet
2. I'm not sure
3. I can do this satisfactorily
4. I can do this fairly well
5. I can do this very well

Personal Assessment 1 - 5

_____I can anticipate problems before they occur
_____I define the problem and identify possible/apparent causes
_____I identify possible alternative solutions and select the most appropriate ones
_____I facilitate the group in identifying and evaluating possible solutions
_____I develop plans to implement solutions
_____I can handle several problems at one time
_____I understand the steps involved with critical thinking

Add your score.	**Total score:**

SCORE

- ❍ 8 - 16 More work required for this area
- ❍ 17 - 31 Competent in some skills, some need more work
- ❍ 32 - 40 Competent in this area

—From http://www.umr.edu/~stuact/probsolv.htm

2. Decision Making Skills Inventory

Assess your capabilities in each of the skills listed according to this scale:

1. I have not done this yet
2. I'm not sure
3. I can do this satisfactorily
4. I can do this fairly well
5. I can do this very well

Personal Assessment 1 - 5

_____I can understand the steps involved with effective decision-making
_____I can facilitate groups in the decision-making process
_____I can implement effective decisions
_____I take responsibility for decisions
_____I evaluate the effects and effectiveness of a decision
_____I am able to make decisions without feeling pressured
_____I am flexible with decisions
_____I can explain to others unpopular decisions

Add your score.	**Total score:**

SCORE

- ❍ 8 - 16 More work required for this area
- ❍ 17 - 31 Competent in some skills, some need more work
- ❍ 32 - 40 Competent in this area

—From http://www.umr.edu/~stuact/decmake.htm

3. Oral and Written Communication Skills Inventory

Assess your capabilities in each of the skills listed according to this scale:

1. I have not done this yet
2. I'm not sure
3. I can do this satisfactorily
4. I can do this fairly well
5. I can do this very well

Personal Assessment 1 - 5

_____I can organize and present ideas effectively for formal and spontaneous speeches

_____I can effectively participate in group discussions

_____I prepare concise and logically written materials

_____I listen carefully and respond to verbal and nonverbal messages

_____I can effectively practice parliamentary procedures during a meeting

_____I effectively utilize campus resources for public relations

_____I respond appropriately to positive and negative feedback

_____I can debate issues without being abrasive to others

_____I have effective telephone skills

Add your score.	**Total score:**

SCORE

- ❍ 8 - 16 More work required for this area
- ❍ 17 - 31 Competent in some skills, some need more work
- ❍ 32 - 40 Competent in this area

—From http://www.umr.edu/~stuact/orlwrt.htm

4. Ethics and Diversity Tolerance Inventory

Assess your capabilities in each of the skills listed according to this scale:

1. I have not done this yet
2. I'm not sure
3. I can do this satisfactorily
4. I can do this fairly well
5. I can do this very well

Personal Assessment 1 - 5

_____I can define and explain ethical behavior

_____I practice ethical behavior in difficult situations

_____I accept others' opinions and actions in a non-judgmental way

_____I interact with and appreciate members of the opposite sex

_____I understand what sexist behavior is and try to exhibit non-sexist behavior

_____I interact with and appreciate people from ethnic backgrounds different than my own

_____I interact with and appreciate people from religious backgrounds different than my own

_____I understand what racist behavior is and try to exhibit non-racist behavior

_____I interact with and appreciate people with disabilities

Add your score.	**Total score:**

SCORE

- ❍ 8 - 16 More work required for this area
- ❍ 17 - 31 Competent in some skills, some need more work
- ❍ 32 - 40 Competent in this area

—From http://www.umr.edu/~stuact/ethics.htm

Guidebook Volume II
PERFORMANCE *ASSESSMENT*
and CURRICULUM DEVELOPMENT

Section IX

Multiple Choice
Performance Assessments

Multiple Choice Performance Assessments

—Constructing Multiple Choice Performance Assessments

A multiple choice item consists of two parts: ***1) the stem***, which poses the problem or question, and ***2) several alternatives***, which include the correct response. The trainee is instructed to choose the alternative that is the correct or most appropriate response.

The stem. The stem presents the problem and may be a question, a statement, or a phrase. Care should be taken to develop a clearly worded stem. As you write the stem for multiple choice items, remember:

- If you write the stem in negative terms, underline the word making the stem negative (not, worst, etc.).
- Avoid ending the stem with "a" or "an" since some alternatives may begin with vowels and some with consonants.
- The stem should be complete enough that students who have mastered the task should be able to determine the correct answer without looking at the alternatives.
- The stem should present the problem in a clear and unambiguous manner. Avoid stems that are vague or too short.
- Avoid clues in the stem which give away the correct alternative.
- Punctuate the stem properly; use a question mark for a question, a period for a statement, and a colon for an incomplete sentence or phrase.
- You can refer to or include diagrams, pictures, schematics, or other types of problems in the stem.

The alternatives. As you develop alternatives for the stem, remember that the alternatives:

- May be single word, phrases, or complete sentences.
- Should be written at a level appropriate for the students.
- Should be very similar to one another in length, point of view, and grammatical structure.
- Should all be reasonable, plausible responses.
- If numerical, should be in ascending or descending order.
- Should not give any hint of the correct answer through arrangement, wording, or punctuation.
- Should each appear on a separate line and be labeled by capital letters or other easily identifiable means.

- Should be 4 or 5 in number (fewer than four greatly increases the chances of guessing; more than five takes a lot of time).
- Should not follow any pattern of correct answers; using dice (ignoring five and six) is a good way to ensure that the correct response (A, B, C, or D) appears randomly.
- Should be as short as possible—include any repetitious wording in the stem.
- Should include only *one* correct answer.
- Should not use “all of the above” or “none of the above” just to come up with enough alternatives.
- Should each contain only one complete thought.

Although each of the foregoing tips may seem minor, taken together, they will result in much more valid test items that will more effectively assess a student’s mastery of tasks.

—Guidelines for Written Performance Assessments

Regardless of the type of items used to make up a written performance assessment, several guidelines should be followed.

1. Make certain that the items assess the student's mastery of the task. Do not include items that question the learner on content or scope of the task that were not included in the learning activities.
2. Remember: the primary purpose of testing is to assess whether or not each trainee has mastered a task.
3. "Trick" items do nothing but waste time and confuse and frustrate the student.
4. Avoid items that force the student simply to recall facts.
5. Include enough (but only enough) items on a test to fully assess the student's mastery of the key concepts or facts covered in the scope of the task itself. Broader and more complex knowledge tasks will require additional test items.
6. Make sure that the items require a high level of learning on the part of the taker if the task is written at a high level.
7. A good assessment should be easy to take and easy to score.
8. Assessments should be fair. Questions should relate only to material the student should know and an inflexible key should be used in scoring.
9. Assessments also reflect the effectiveness of the learning activities and resources students are using. When several students fail to reach mastery of a task, the trouble may lie with the learning materials.
10. Assessments should keep track of how often students miss specific test items. When a higher than usual number of students miss a particular test item, it probably needs to be reworded.
11. Each item on an assessment should stand alone. Information for subsequent items should not be revealed in an earlier item.
12. Have someone review your assessment before administering it to make sure that the directions and items are clear.
13. Include clearly worded directions for each assessment. Include the purpose, how to respond to each kind of item, how many must be answered correctly for mastery, and what time limit is imposed.
14. Avoid questions from quotes, specific pages of books, or other trivial sources.
15. Shoot for a minimum mastery score of 100% if possible. try to boil the assessment down to as few items as possible and word them very carefully. Another strategy is to require "corrected to 100% accuracy" as your minimum score for written tests. If you use something less than 100%, you should have a very good reason other than "students just won't score 100%."

—*Adapted from* **"Handbook for Developing Competency-Based Training Programs"**
William E. Blank

—Developing Performance Assessment / Multiple Choice

Directions

For tasks for which skill standards have been developed:

1. Develop appropriate written assessments to evaluate mastery of knowledge tasks and to evaluate the knowledge component of skill tasks—use only multiple choice test items.
2. Try out the written assessments and revise.

No.	Criteria for evaluating performance: 100% mastery required	YES	NO
	Directions		
1.	Is the purpose of the assessment stated?		
2.	Is the student told how to respond to assessment items?		
3.	Is the mastery score indicated?		
4.	If applicable, is a time limit mentioned?		
	Overall Test		
5.	Is there a sufficient number of items to assess adequately mastery of the task?		
6.	If the task involves mastery of higher-level concepts and principles, does the test evaluate this?		
7.	Do all items relate directly to the knowledge involved in the task?		
8.	Are clues avoided that may indicate the correct answer to other items?		
9.	Are trick test items avoided?		
10.	Is each stem complete enough for students to determine the answer without looking at the alternative?		
11.	Is each stem a phrase, statement, or question?		
12.	Does each stem state the problem or question clearly?		
13.	Are negatives underlined if used?		
14.	Are “a” or “an” endings avoided?		
15.	Are stems punctuated appropriately?		
	Multiple Choice Alternatives		
16.	Are alternatives constructed similar in length and point of view?		
17.	Is each alternative a reasonable, plausible choice?		
18.	If numerical, are they listed in order?		
19.	Does each appear on a separate line?		
20.	Is each identified by a capital letter or other easily recognizable means?		
21.	Are patterns of correct responses avoided?		
22.	Are there four or five alternatives for each item?		
23.	Is repetitious wording avoided in each alternative?		
24.	Is there only one correct answer for each question?		
25.	Does each alternative contain only one complete thought?		

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Section X

Performance Observation Assessments

Performance Observation Assessments

—Performance Observation

Performance observation is the process of gaining information visually, aurally, or through other senses. It can be used to assess any behavior or product of behavior; it cannot be used to assess events that are not observable (for example, thinking, feeling, or believing). Although behavior may be defined functionally or topographically, it is measured in terms of its duration, latency, frequency, and amplitude. Moreover, one can assess the entire domain of behavior or sample from the domain along three dimensions: contexts, behaviors, and times. Each dimension can provide important and useful information about the behavior and how it is maintained in the environment. Three different sampling plans have been advanced for measuring the duration and frequency of behavior: whole-interval recording, partial-interval recording, and momentary time sampling. Of these three methods, momentary time sampling is the most useful and in general is the most accurate.

Observations are usually conducted on behavior that may require modification or behavior that may indicate a disability condition: harmful behavior, stereotypic behavior, infrequent or absent desirable behavior, or normal behavior shown in inappropriate contexts.

Conducting systematic observations requires as much care and precision as testing during preparation, data gathering, and data summarization. When an observer is preparing to conduct systematic observations, (1) target behaviors must be carefully defined; (2) the contexts in which observations will be conducted and the observation schedule itself must be carefully selected; (3) the recording procedures must be thoughtfully developed; and (4) the means by which data will be collected must be decided (for example, using human observers).

When gathering data, the observer should minimize both random and systematic error. Random error is usually attributed to lack of familiarity with the recording system, to insufficient time to record, or to lack of concentration. Systematic error is usually attributed to unintended changes in the observation process, to failure to desensitize target students, to observer expectancies, or to unmotivated observers.

—Adapted from *Student-Centered Classroom Assessment*, Second Edition, by Richard J. Stiggins, Assessment Training Institute. Merrill, an imprint of Prentice Hall, Upper Saddle River, New Jersey, Columbus, Ohio.

—A Checklist for Developing Performance Observation Assessments

No.	Criteria for evaluating performance: 100% mastery required	YES	NO
	Directions		
1.	Are the directions clear and concise?		
2.	Is the purpose of the assessment mentioned?		
3.	Is the situation described for the student?		
4.	Is the student told exactly what to do?		
5.	Are any special restrictions mentioned?		
6.	Is any time limit mentioned?		
	Test Items Relating to Process		
7.	Are process items included if the process is important for competence on the job?		
8.	Are only critical process items included?		
9.	Do items begin with a verb in the *past* tense?		
10.	Are items based on the procedural steps in the task analysis?		
11.	Is each item objective and observable?		
12.	Can each be rated *yes* or *no* and worded so that *yes* is the desired response?		
13.	Are words such as “good” and “well” avoided?		
14.	Is only one step included per item?		
15.	Are sub-items used if needed?		
16.	Are items listed in the order in which they occur?		
	Items Relating to Product		
17.	Are product-related items included if the quality of a finished product is critical for competence?		
18.	Are only critical characteristics of the finished product included?		
19.	Do test items begin with a verb in the present tense?		
20.	Are items objective and observable?		
21.	Are criteria for acceptability spelled out clearly (size, location, precise dimensions, etc.)?		
22.	Can each be rated *yes* or *no*, with *yes* the desired response?		
23.	Is only one product characteristic included per test item?		
24.	Are sub-items used if needed?		
25.	Are items written at a high-enough level to ensure the job competence of those passing the test?		

—Performance Assessment for Charging a Vehicle Battery

PERFORMANCE TEST

Task	Charge vehicle battery
Directions	Demonstrate mastery of this task by doing the following:

This assessment evaluates your ability to slow-charge a vehicle battery. You will be assigned a customer's vehicle. Clean and check the battery and slow-charge it to full charge. Write down the temperature and specific gravity *each hour*.

Caution: Have the instructor check your connections before turning on the battery charger.

No.	YOUR PERFORMANCE WILL BE EVALUATED USING THE ITEMS BELOW; ALL MUST BE "YES."	YES	NO
	Directions		
1.	Were any external defects in the battery detected during inspection?	✓	
2.	If needed, were cells filled?	✓	
3.	Was the battery cleaned and dried?	✓	
4.	Was the battery removed from the vehicle or cable clamps disconnected (ground first) before charging?	✓	
5.	Was the charger switch in the OFF position before being connected to the terminals?	✓	
6.	If the battery was removed, was it placed on an insulating surface?	✓	
7.	Was the charger connected to battery + to + and - to -?	✓	
8.	Was the charger turned on?	✓	
9.	Was the charging rate appropriate for the vehicle's battery?	✓	
10.	Was the temperature and specific gravity checked every hour?	✓	
11.	Was the charger turned off before being disconnected?	✓	
12.	Was the battery reinstalled in the vehicle securely?	✓	
13.	Were the cables reconnected + to + and - to -?	✓	
14.	Is the battery fully charged?	✓	
15.	Will the battery start the vehicle?	✓	

Student	Date	Attempt	Instructor's Signature	
		1 2 3 4		***Page 1 of 1***

The following assessment using a checklist of indicators of performance were written using the attached skill standard performance criteria developed for Call Centers.

—Performance Assessment for Telephone Sales and Service Based on Skill Standards

In a simulated customer phone call the customer service representative performed to the following standard:

met	partial	not met	1. Customer data (such as name, account number, date, request, etc.) are asked in an efficient and positive manner.
met	partial	not met	2. Customer needs are clearly defined and confirmed.
met	partial	not met	3. Customer expectations are summarized concisely and recorded following standard operating procedures.
met	partial	not met	4. Appropriate data is examined and compared to accurately assess needs.
met	partial	not met	5. If the situation requires another partner's help, such as a supervisor's approval, the representative makes this request in a timely manner.
met	partial	not met	6. Alternatives and benefits are clearly presented to customer within the established guidelines.
met	partial	not met	7. Alternatives are consistent with the needs expressed by the customer.
met	partial	not met	8. Alternatives reflect working knowledge of company products, services, policies and procedures.
met	partial	not met	9. Alternatives include recommendations for additional services or products.
met	partial	not met	10. Final decision is agreed upon by customer and representative.
met	partial	not met	11. Documentation of outcome is accurate, clear and concise.
met	partial	not met	12. Next steps or follow-up is clearly communicated to customer, including realistic time and service promises.

—Skill Standards Observation Checklist for a Cosmetologist

*[During your observation time, check (✓) the task and performance criteria if you had the opportunity to **see it performed**.]*

Task A1.1 Consult with clients to determine needs/preferences

1. Client is addressed by name and given an accurate overview of services and products available — **Yes_____No____**
2. Client is carefully observed and appropriately questioned to determine their needs and expectation — **Yes_____No____**
3. Benefits and/or features of products and services are discussed — **Yes_____No____**
4. Visuals are used to enhance communication (pictures, charts, etc.) — **Yes_____No____**
5. The client is asked permission to proceed before services are performed — **Yes_____No____**

Task A1.2 Conduct services in a safe environment and prevent the spread of disease

1. Work area is cleaned and organized before each service — **Yes_____No____**
2. Safety and sanitary precautions are taken to protect client and self — **Yes_____No____**
1. Personal protective measures, such as gloves, smock, etc., are appropriately used — **Yes_____No____**
4. Client is draped and properly prepared for service — **Yes_____No____**
5. Equipment and instruments are sterilized and maintained prior to each use — **Yes_____No____**
6. Signs of infections or contagious diseases are identified and appropriate actions and precautions are taken — **Yes_____No____**

Task A1.3 Implement time management strategies

1. Accurate time allotments are developed and used when scheduling clients — **Yes_____No____**
2. Stylist has a reminder system for daily schedules and tasks are appropriately used and maintained — **Yes_____No____**
3. Minimize clients waiting time by performing services in appropriate time frame — **Yes_____No____**
4. A waiting list used to fill in changes is actively utilized — **Yes_____No____**
5. Stylist uses his/her time wisely when there is a cancellation, i.e., professional development, or to benefit salon operations — **Yes_____No____**

Task A1.4 Develop and Implement strategies to retain clients

1. Does the stylist have many return clients — **Yes_____No____**
2. If not, stylist has a plan or strategy on how to retain clients utilizing tools and policies set by salon — **Yes_____No____**

Task A1.5 Assess Customer Satisfaction

1. Past clients are systematically contacted to determine customer satisfaction **Yes_____No____**
2. Client feedback is actively sought and accurately used as self-evaluation of performance **Yes_____No____**

Task B1.1 Sell professional salon products to customers

1. Clients' needs are accurately defined **Yes_____No____**
2. Stylist talks with clients on products that are best for them **Yes_____No____**
3. Benefits of products are discussed in accordance with salon protocol **Yes_____No____**
4. Stylist pays attention to unit cost and offers clients the best buy for money **Yes_____No____**
5. Stylist utilizes space to market products sold in salon **Yes_____No____**
6. Products are appropriately promoted through personal use **Yes_____No____**

Task B1.2 Maintain and assess income and expense records

1. Stylist has organized a system for maintaining records of income, tips and expenses **Yes_____No____**
2. Records are effectively used to determine business growth **Yes_____No____**

Task B1.3 Update and maintain client records

1. Adequate and accurate client records are kept; i.e., chemical service, shampoo, conditioners used **Yes_____No____**
2. Dates of procedure(s) are accurately recorded **Yes_____No____**
3. Any personal client changes, i.e., address, telephone, etc., are accurately and systematically updated **Yes_____No____**
4. A client record system is developed and current information on clients is accurately maintained **Yes_____No____**

Task B1.4 Perform inventory control

1. Adequate product supply for client services is accurately maintained in accordance with salon protocol **Yes_____No____**
2. Product waste is completely avoided by using appropriate amount of product **Yes_____No____**
3. Products are purchased in bulk quantities for salon use when appropriate **Yes_____No____**
4. Retail product supply is routinely inventoried according to salon protocol and orders placed accordingly **Yes_____No____**

Task B1.5 Handle money transactions

1. Service and/or retail sales slip is accurately filled out **Yes_____No____**
2. Change is accurately made for money transactions in a timely manner **Yes_____No____**

3. Credit card is accurately processed **Yes_____No____**
4. Checks are endorsed with bank stamp in accordance with salon protocol **Yes_____No____**

Task C1.1 Safely use salon products while providing client services

1. All appropriate protective measures are being appropriately used to protect self and client against product hazards **Yes_____No____**
2. Benefits and features of products are accurately being discussed with clients **Yes_____No____**
3. Products are being appropriately selected according to the client's hair, scalp and skin condition **Yes_____No____**
4. Clean-up procedures are being accurately conducted and include proper storage and disposal of products according to environmental and health safety guidelines **Yes_____No____**
5. Stylist utilizes space to market products sold in salon **Yes_____No____**
6. Products are appropriately promoted through personal use **Yes_____No____**

Task C1.2 Provide basic skin care services

1. Skin is completely cleansed using proper techniques and products according to skin type **Yes_____No____**
2. Toners and moisturizers appropriate to skin type and condition are correctly applied **Yes_____No____**
3. Techniques in facial massage therapy are being properly used **Yes_____No____**
4. Proper skin care is appropriately discussed with client **Yes_____No____**
5. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.3 Provide basic manicure or pedicure

1. Finger or toenails are shaped, conditioned and polished to the satisfaction of the client **Yes_____No____**
2. Hands, wrist and arms or feet, ankles and calves are appropriately massaged and moisturized **Yes_____No____**
3. Proper nail care is appropriately discussed with the client **Yes_____No____**
4. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.4 Apply appropriate cosmetics to enhance a client's appearance

1. Skin is properly prepared before make-up application **Yes_____No____**
2. Foundation and color is applied according to client's individual skin condition, color palette and style **Yes_____No____**
3. Proper make-up techniques are appropriately discussed with the client **Yes_____No____**
4. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.5 Perform a shampoo in preparation for hair treatments or styling

1. Correct shampoo and conditioner is properly chosen according to hair analysis **Yes_____No____**
2. Products are properly used according to manufacturer's instructions **Yes_____No____**
3. Water temperature is in accordance with client's preference **Yes_____No____**
4. Scalp massage technique is properly applied **Yes_____No____**
5. Shampoo is completed in a timely manner **Yes_____No____**
6. Hair is thoroughly rinsed free of applied products **Yes_____No____**

Task C1.7 Provide styling and finishing techniques

1. Vision and appropriate techniques to achieve desired look are effectively conceived **Yes_____No____**
2. A variety of finishing techniques are accurately used to achieve the client's desired hairstyle **Yes_____No____**
3. Client is accurately instructed on procedures and/or products to insure their satisfaction and ability to recreate the style **Yes_____No____**
4. Styling and finishing techniques are being effectively applied to complete a hairstyle to the satisfaction of the client **Yes_____No____**
5. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.8 Conduct a color service

1. Correct formula of solution is accurately chosen according to hair texture, porosity and elasticity **Yes_____No____**
2. Manufacturer procedures, directions and precautions are carefully reviewed **Yes_____No____**
3. Client is carefully observed to determine adverse reactions to solutions, procedures or products **Yes_____No____**
4. Color service is accurately conducted in accordance with client's needs or expectations **Yes_____No____**
5. Client is accurately instructed on procedures and/or products to insure their continued satisfaction **Yes_____No____**
6. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.9 Perform hair relaxation and/or wave formation (perm) service

1. Correct technique or formula of solution is accurately chosen according to hair texture, porosity and elasticity **Yes_____No____**
2. Manufacturer procedures, directions and precautions are accurately reviewed before performing service **Yes_____No____**
3. A test of formula is correctly made with client's hair **Yes_____No____**

4. Client is observed to determine adverse reactions to solutions, procedures or products **Yes_____No____**
5. Client is accurately instructed on procedures or products to ensure their continued satisfaction **Yes_____No____**
6. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.10 Provide non-surgical hair additions

1. Appropriate hairpiece is accurately selected according to client's individual needs and style **Yes_____No____**
2. Hairpiece is properly fit, styled and adapted to maintain a natural appearance **Yes_____No____**
3. Client is accurately instructed on proper maintenance, application and removal of hairpiece **Yes_____No____**
4. Addition techniques are effectively used to enhance hair volume **Yes_____No____**
5. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

Task C1.11 Perform hair removal services

1. Skin analysis is accurately performed and skin is properly prepared **Yes_____No____**
2. Hair removal service is performed to the satisfaction of the client **Yes_____No____**
3. After care, such as moisturizer, antibacterial lotion, etc., is effectively performed to promote the comfort and satisfaction of the client **Yes_____No____**
4. Service is completed in a timely manner in accordance with salon protocol **Yes_____No____**

—Contributed by Noreen Bowdon and Kay Hirai

Occupation Cluster: **TELECOMMUNICATIONS NETWORK TECHNICIAN**
Function or Job Duty: ***Install, Test and Maintain Equipment and Facilities***

TASK	***Performance Criteria*** How do we know when the task is performed well?	***Technical Knowledge*** Skills, Abilities, Tools	***SCANS Skills and Personal Qualities*** Foundational Abilities
3. ***Provide and maintain network paths to include voice, data, video and broadband services***	• Appropriate connections are made to ensure service to customer specifications and to industry standards. • Wires and cables are tagged, tested and terminated as necessary. • Prescribed tests, repairs or maintenance are appropriately performed using appropriate test equipment. • Appropriate testing is successfully performed to ensure compliance with FCC rules and regulations, system specifications, and labor management negotiated health and safety procedures.	• Understanding of technical applications, proper procedures and industry and union standards.. • Ability to read, interpret and analyze and manipulate information provided by the work order and associated documents. • Knowledge of tagging and testing procedures. • Ability to distinguish and utilize appropriate test equipment and perform conformance testing.	• Knowledge of applicable codes, rules, regulations and standards. • Ability to follow proper procedures. • Ability to visually analyze the relationship between the parts/whole, process/procedure. • Understanding of and ability to follow specified maintenance procedures.
1. ***Respond to requests for repair, service and maintenance***	• Appropriate tools, test equipment and supplies are taken to the site in a timely manner.	• Ability to adhere to and maintain the time commitment to the customer. • Ability to read and interpret information provided by the job ticket, service order, work order, record maps, and/or mechanized dispatch system. • Knowledge of how to select and use proper hand tools and testing equipment such as VOM test sets.	• Ability to select and obtain information relevant to the task. • Ability to develop and apply creative solutions to new situations.

—Adapted from ***Building a Path in Telecommunications: Skill Standards for the Network Technician***
South King County Tech Prep Consortium

—Skill Standards for the Network Technician
Performance Assessment Tool

Install SNI and Jack

Scenario

You have been sent to a home to install an SNI and a jack on the same wall.

Instructions

Install the SNI and jack on the same wall including ground wire and internal wire.

To receive a Proficient rating on this task, you must show all of the following:

1. Safety gear must be worn and safety procedures must be followed.
2. The SNI must be securely and properly attached and terminated.
3. The jack must be securely and properly attached and terminated.
    - Ground wire must be properly installed.
    - Internal wire must be properly installed.
    - Wires must be neatly secured to the wall.
    - Tools must be used properly.
4. Upon completion of the installation, use your tone generator and butt end to test the line. There must be tone.
5. After completing this assessment, you will be asked to check your work using the same list as the observer is using.

Your Feedback

- Were you exposed to the occupational knowledge required to respond to this scenario?

  (circle one) Yes No

- Was this task difficult for you?

  (circle one) Yes No

- Do you feel confident in doing this work under any circumstances?

  (circle one) Yes No

- Was this assessment helpful to you in some way? Please explain.

  (circle one) Yes No

_____

_____

_____

_____

Scoring Information

Safety	☐ 1	☐ 2	☐ 3	☐ 4
Bonding	☐ 1	☐ 2	☐ 3	☐ 4
Mount SNI	☐ 1	☐ 2	☐ 3	☐ 4
Mount Jack	☐ 1	☐ 2	☐ 3	☐ 4
Internal Wire	☐ 1	☐ 2	☐ 3	☐ 4
Tools	☐ 1	☐ 2	☐ 3	☐ 4
Overall Rating *(1, 2, 3, or 4)*		_____		

Telecommunications Network Technician

Install SNI / Jack

Performance Assessment Checklist

Apprentice/Student Name_____

Assessor Name_____ Date_____

1) Safety

Wears hard hat, vest, glasses	❒ Yes	❒ No
Checks for foreign voltage	❒ Yes	❒ No
Assess job site for potential hazards	❒ Yes	❒ No

2) Mount SNI

Box is mounted straight and level	❒ Yes	❒ No
Box is secure with two screws	❒ Yes	❒ No

3) Bonding

Ground wire insulation is removed	❒ Yes	❒ No
Ground wire is terminated securely at lug	❒ Yes	❒ No
Ground wire is attached in clockwise direction	❒ Yes	❒ No
Ground wire is secured to SNI with a tie wrap	❒ Yes	❒ No
Tie wrap end is trimmed close	❒ Yes	❒ No
Ground source surface is cleaned with Emory cloth	❒ Yes	❒ No
Ground clamps are installed and tightened	❒ Yes	❒ No
Ground wire outer insulation is removed	❒ Yes	❒ No
Ground wire is installed in clamp, tightened and ends trimmed	❒ Yes	❒ No
Ground warning tag is attached through wire at clamp end	❒ Yes	❒ No
Wire is secured to wall with no sharp bends	❒ Yes	❒ No
Wire is secured straight and level	❒ Yes	❒ No
There are 2 staples at each bend of each corner	❒ Yes	❒ No
Staples are evenly spaced (length of stapler body)	❒ Yes	❒ No

4) Mount Jack

Jack is stripped to 12”-18”	❒ Yes	❒ No
Wire is wrapped once or twice around the block	❒ Yes	❒ No
White/blue and white/orange pairs are pulled forward	❒ Yes	❒ No
White/blue and white/orange pairs are separated and insulation removed	❒ Yes	❒ No
Pairs are wrapped clockwise around correct tips and rings	❒ Yes	❒ No
Correct wires on the cover are attached to proper tips and rings	❒ Yes	❒ No
All wires are tucked away neatly	❒ Yes	❒ No

5) Internal Wire (IW)

Wire is stripped to 12”-18”	❒ Yes	❒ No
Wire is separated into proper pairs by color code	❒ Yes	❒ No
White/blue and white/orange are separated and insulation removed	❒ Yes	❒ No
Pairs are laid on the proper lug for the color code	❒ Yes	❒ No
Wire is wrapped clockwise on lugs	❒ Yes	❒ No
Wire is stapled straight and neat	❒ Yes	❒ No
There are two staples on each side of each corner	❒ Yes	❒ No
Staples are evenly spaced (length of stapler body)	❒ Yes	❒ No
Corners are not too sharp	❒ Yes	❒ No
There are no staples through the wire	❒ Yes	❒ No
Sufficient slack is left on both ends to make connections	❒ Yes	❒ No
Slack is neatly tucked	❒ Yes	❒ No
Unused pairs are put away neatly in SNI	❒ Yes	❒ No
Unused pairs are put away neatly in jack	❒ Yes	❒ No

6) Tools

Proper tool is used for the proper function	❒ Yes	❒ No
Tools are in good repair	❒ Yes	❒ No
Tools are kept in an orderly fashion	❒ Yes	❒ No
Tools are easily accessible for use	❒ Yes	❒ No
All standard tools are present in the tool belt	❒ Yes	❒ No
Tools are used safely (i.e., wire stripping away from body)	❒ Yes	❒ No

Telecommunications Network Technician

Install SNI / Jack

Performance Assessment Materials and Tools List

1) Materials

SNI (Subscriber Network Interface)
Jack
Inside wire
Ground wire
Ground tag
Ground clamp
Drywall screws and staples for staple gun

2) Tools

Hand level
188-A test set
Staple gun
Screw driver (flat blade)
Screw driver (Phillips head)
Can wrench
Yankee drill or cordless drill
Emory cloth
Snips
Needle nose pliers
Diagonal pliers
Tone generator
Hand set test set
Butt end
SNI access tool

3) Safety Gear

Vest
Glasses
Hard hat

—Telecommunications Network Technician Performance Assessment Scoring Rubric—*Install SNI Jack*

Rating	*Safety*	*Bonding*	*Mount SNI*	*Mount Jack*	*Internal Wire (IW)*	*Tools*
4.	Wears hard hat, glasses, vest. Uses 188-A test set to identify foreign voltage	Ground wire is stripped correctly, laid down securely at lug and wound in a clockwise direction. Ground wire is tied to SNI with a tight no wrap that is trimmed close. Bonding surface is cleaned with Emory cloth. Bonding clamps are installed and tightened correctly. Ground wire is stripped and installed in clamp, tightened and ends trimmed. Wire is secured to wall with no sharp bends, level and perpendicular, with 2 staples at the corners.	Box is mounted straight and level, well secured with two screws.	Jack is mounted to the wall using 2 screws, it is straight and level. Wire is stripped to 12", wrapped once or twice around the block. The white/blue and white/orange pairs are used; the others are wrapped around the block. Pairs are wrapped around the correct tips and rings and attached to correct wires on the cover - they must be matched up properly. Wires are tucked away neatly. Wires are kept away from center.	Wire is stripped to 12" minimum and separated into the proper pairs by color code. White/blue and white/orange are stripped. Pairs are laid on the proper lug for that color code (line 1, line 2, tip and ring). Wire is wrapped clockwise on lug. It is stapled strait and neat, with 2 staples at the corners. Bends are not too sharp. Sufficient slack is left on both ends and is neatly tucked. Unused pairs are put away neatly.	The proper tool is used for the proper function. Tools are in good repair. Tools are kept in an orderly fashion with good access for use. Tools are not abused. All standard tools are present in the tool belt.
3.	Wears hard hat, glasses, vest but neglects to check for foreign voltage.	Lugs are not tight, tails are left on or not tied in with tie wrap or not wound clockwise. There is only one staple at the corners and/or staples are not evenly spaced. Grounding surface is not cleaned. Wire is not secured in a straight (plumb) fashion.	One screw is left out.	Wire is not tucked away neatly. Screws are not as tight as they need to be. Jack is crooked.	Sufficient slack is not left. Wires are not tucked neatly. They are not secured straight and neat. Wire is not wrapped clockwise. Staples are not evenly spaced or there are not 2 staples at the corners or the bends are too sharp.	The appropriate tools are not used for a job. The best tool for a job is not chosen.
2.		A major step is omitted: wire is not attached to lugs or clamp, wire is not secured to wall.	The box is installed crooked.	One major step is missed: the wrong colors are stripped or the wrong colors from the cover are attached. Screw goes through the wires when cover is placed.	One major step is missed: pairs are mismatched. OR wire has a staple in it. OR wire is not attached to lugs or tips.	Tools are abused. Tools are not present in the tool belt.
1.	Is not wearing all three safety gear: hard hat,	Bonding is not completed at all or more than one major step is omitted.	The box is not mounted to	More than one major step is missed or it is not done.	More than one major step is missed or the wire is not installed.	No tools are brought to the job. Tools are misused and abused.

	glasses, vest.		the wall.			

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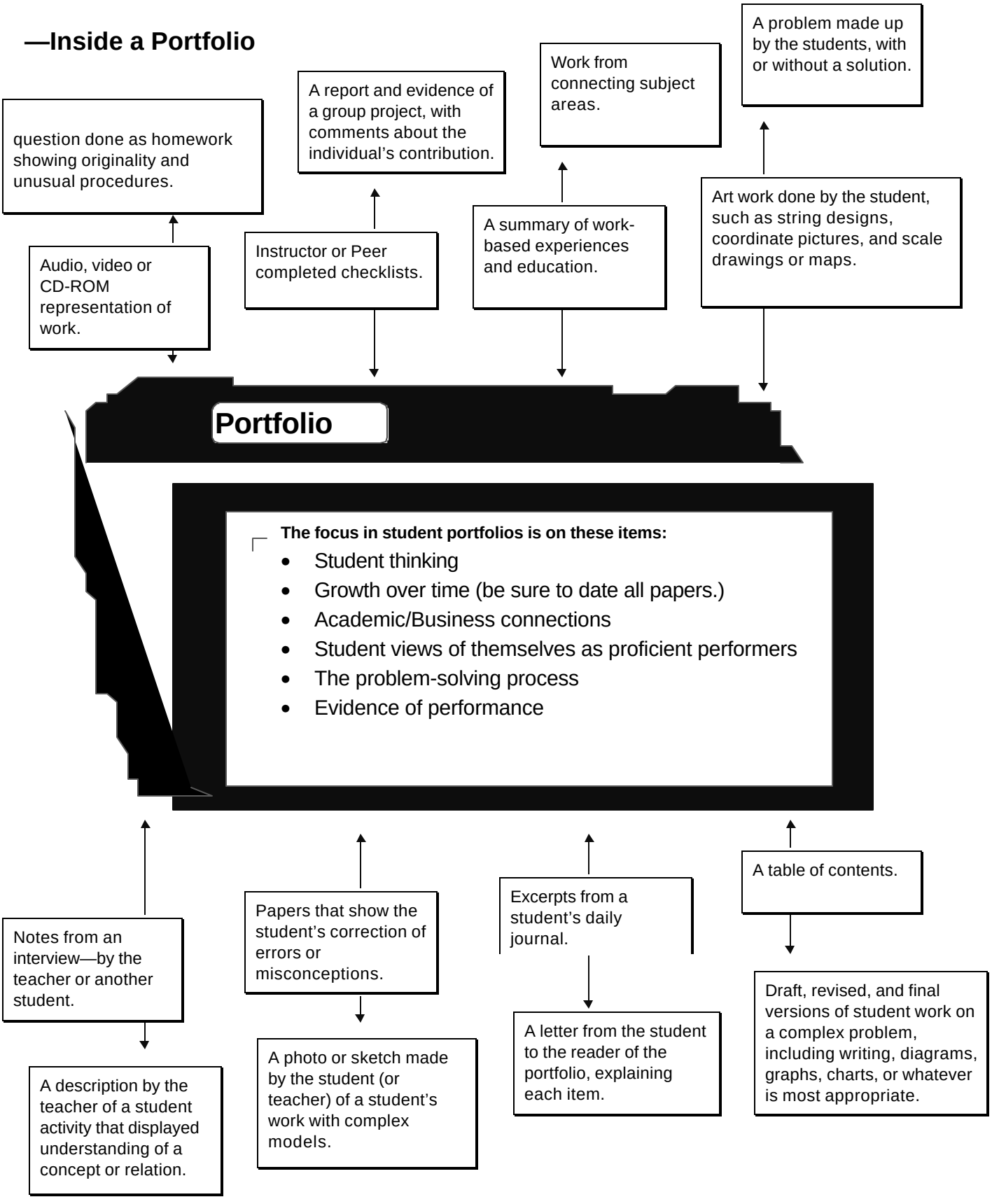
Section XI

Portfolio Performance Assessment

Portfolio Performance Assessment

—Inside a Portfolio



—Criteria for Portfolio Performance Assessment

To the Teacher/Performance Assessor—

The lines below represent a continuum of criteria for performance assessment of an individual's portfolio. Place an X anywhere on the line between the descriptors so that it best reflects your perspective regarding the portfolio.

Incomplete with missing or partial pieces	***Complete with all appropriate pieces included***
Inaccurate with some pieces being misrepresented	***Accurate with all information from learning or work experience included***
Low quality with unclear and unrefined components	***High quality of work with clear and refined components***
Superficial representation of work	***Complex and in-depth representation of work***
Narrow representation of knowledge, skills and attitudes in field of study	***Appropriately inclusive representation of knowledge, skills and attitudes in field of study***
Little or no evidence of performance outcome	***Abundant and meaningful inclusion of evidence reflecting performance outcomes***

To the Student/Performer—

Review each pair of items on the continuums. Place an **X** at the point you would judge your portfolio to be. Compare your perspective with that of your instructor/performance assessor.

What insights do you have about any differences in perspectives you discover as you compare yours with your assessor's?

What actions might you take to address any significant discrepancies?

—Sample Performance Assessment Rubrics for Various Portfolio Items

Sample Rubric for Research Paper

Novice	*Apprentice*	*Proficient*	*Distinguished*
• Limited awareness of audience and/or purpose • Minimal idea development, limited an/or unrelated details • Few references • Random or weak organization • Incorrect or lack to topic and/or transition sentences • Incorrect and/or ineffective wording and/or sentence structure • Errors in surface features (e.g., spelling, punctuation, capitalization, headings) are disproportionate to length and complexity	• An attempt to establish and maintain purpose and communicate with the audience • Unelaborated idea development; unelaborated and/or repetitious details • Some references • Lapses in focus and/or coherence • Simplistic and/or awkward sentence structure • Simplistic and/or imprecise language • Some errors in surface features that do not interfere with communication	• Focused on a purpose; evidence of voice and/or suitable tone • Depth of idea development supported by elaborated, relevant details • Use of references indicate ample research • Logical organization • Controlled and varied sentence structure • Acceptable, effective language • Few errors in surface features relative to length and complexity	• Establishes and maintains clear focus; evidence of distinctive voice and/or appropriate tone • Depth and complexity of ideas supported by rich, engaging, and/or pertinent details; evidence of analysis, reflection and insight • Use of references indicates substantial research • Careful and/or suitable organization • Variety of sentence structure and length • Precise and/or rich language • Control of surface features

Sample Rubric for Oral Presentations

Novice	*Apprentice*	*Proficient*	*Distinguished*
• Presenter is difficult to hear; rate of speaking is too fast or too slow • The speaker does not show much interest and/or enthusiasm in the topic; may sound like the speaker is reading the presentation • Eye contact is made with only some of the audience. The speaker may have nervous habits which distract from presentation • The speaker is not presentable. • Presentation shows little organization, rambles or it may seem like a list of facts; details and examples are lacking or not well-chosen for the topic or audience • Very little use an/or poor use of visuals with no handouts • Speaker does not involve	• Presentation is generally similar to one receiving a novice rating • There are one or two elements which are relatively well done	• Presentation is as good as one receiving a distinguished rating • There are one or two elements of the presentation which are less polished	• Presenter speaks in a clear voice and shows a flair for communicating with the audience; rate of speech is appropriate • Speaker makes eye contact with everyone and has no nervous habits • Speaker is appropriately dressed and has excellent posture • Presentation is well organized with a beginning, middle and end; clear main ideas and transitions; information is complete and accurate; • Visual aids are well done and used to make presentation more interesting and meaningful • Speaker involves audience, allowing time for audience to think and respond • Presentation is appropriate

audience			length

—From http://129.7.160.115//CourseDocs/INST_6031/6031_Home/APPEND-1.H

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Section XII

Scenario Based Performance Assessments

Scenario Based Performance Assessments

A problematic or challenging situation presented in the context of the career-technical content area that requires the student to:

- analyze and/or evaluate a situation or problem
- apply relevant content knowledge or skills
- propose and justify a reasonable solution

—Developing Scenarios for Classroom Use

The use of written scenarios in your classroom is in line with current educational reform initiatives calling for students to think critically, solve problems, communicate effectively in writing, and make connections with the "real" world. Written scenarios require students to apply knowledge and interpret information in a career-technical context. Through their explanations and proposed solutions or plans of action, students demonstrate critical thinking skills as well as content knowledge.

1. Write a scenario describing a problem to be solved or a situation to evaluate.

- The problem or situation should reflect one or more functions in the skill standard setting and context, but avoid presenting too much detail. Ask yourself: Is this essential information? Will the scenario not make sense without it?
- The scenario should be presented in paragraph form. Bullets may be used to list details.

2. Prepare instructions for the students.

- The instructions should tell the students what is needed in their response. Do not provide too much leading information which removes the need for critical thinking on the student's part. Use declarative sentences. Avoid questions.

3. Identify what information or concepts are required for a proficient rating.

- Specific to each scenario:
  - —Knowledge of...:
    (no more than four bullets representing model curriculum standards, instructional content within a standard, and/or career performance standards the students should address in their responses.)
- Standards for all scenarios:
  - —Ability to propose a solution to this scenario
  - —Ability to communicate effectively in writing

4. Compare the scenario with the instructions.

- Make sure that there is consistency among what is presented in the scenario, what is prompted in the instructions, and what is required to receive a proficient rating.

—Guidelines for Scenario Development

- Realistic setting all students can imagine
- Requires knowledge that all students should know
- Poses a problem/challenge for students to solve
- Instructions are succinct and relatively simple
- Scenario, instructions and bullets are closely linked
- Bullets should:
  - —Use the wording of the particular industry skill standards
  - —Help students target key information
  - —Not introduce new concepts

—Example of Written Scenario Performance Assessment for Student Use

Subject Area: ***Electronics***
Topic Area: ***Teamwork***
Scenario Title: ***"A Change Order"***

Tell us about yourself:

_____
Respondent name

_____
Company/organization

_____
Position/title

Male ☐ Female ☐

_____
Supervisor name or name of unit

How long have you been employed in this position? ☐ years

_____
Education level completed

_____
Additional training/certification required for this job

Are you currently enrolled in a career-technical training program?

Yes ☐ No ☐

Guidelines for the written Scenario:

This is a writing and problem-solving task in which you will be required to demonstrate your knowledge and skills.

- Consider the problem presented in the scenario.
- Write your response.
- Review your response and make changes, as needed.

Be sure to follow the INSTRUCTIONS provided after the SCENARIO. You may use a separate sheet of paper for organizing your ideas. Do your best to write a complete and accurate response. Include enough details and examples to make your ideas clear to the reader. Return this booklet and your notes at the end of the given time.

A Change Order

ENTER START TIME HERE

Scenario

You are a team leader for a computer hardware manufacturing unit. You have just received a change order on a motherboard that your unit is fabricating. You know this motherboard is part of a large order for a customer and needs to be shipped overseas before 5:00 PM today.

Instructions

Think about what you know about initiating rapid change in the manufacturing process and building team support. Describe the steps you would take to identify the required changes and carry out the new specifications. Also, describe how you would maintain team spirit and cohesiveness during this process.

To receive a Proficient rating on this task, you must show all of the following:

1. Knowledge of:
    - change processes in manufacturing
    - leading work teams
2. Ability to propose an effective response to this scenario
3. Ability to communicate clearly in writing

Please write your response below and on the following pages:

ENTER STOP TIME HERE

Your feedback

1. Were you exposed to the occupational knowledge required to respond to the scenario?

   (circle one) Yes No

   Explain_____

   _____

2. Was this task difficult for you?

   (circle one) Yes No

   Explain_____

   _____

3. Did you find this task interesting?

   (circle one) Yes No

   Explain_____

   _____

4. What would you change in order to make this task better?

   _____

   _____

   _____

   _____

for official use only

Scoring information

content / analysis	☐	☐	☐	☐	☐
writing	☐	☐	☐	☐	
	low	***basic***	***proficient***	***advanced***	***Overall***

—Scenario Based Performance Assessment for Telephone Sales and Service Based on Skill Standards

The following performance assessment is an example of using Scenarios to determine indicators of performance level:

Scenario #1

You have logged in the customer's name, account number, and asked "How can I help you?"—The customer is upset because she expected and needed the service requested a week ago. How would you calm down the customer and troubleshoot the situation? Explain in detail what you would say, and your follow-up actions.

Scenario #2

The customer is confused about the possible alternatives that may solve their problem. Identify 2-3 alternatives and point out how the alternative may benefit the customer.

Scenario #3

The customer is having difficulty deciding among alternatives—the call is taking significantly longer than typical. Other callers are on hold. How would you handle this situation? Explain in detail what you would say and your follow-up actions.

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Section XIII

Funding for Performance Assessment and Curriculum Development

Funding
for Performance Assessment and Curriculum Development

For current information and applications for funding to support Performance Assessment and Curriculum Development projects, contact the Washington State Board for Community and Technical Colleges, 360-586-1454, or access the SBCTC Web site:

http://www.sbctc.ctc.edu

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Section XIV

Resources/Other Readings

Resources/Other Readings

—Bibliography

Complete Bibliographies are published in Section XII of **Guidebook Volume I—*SKILL STANDARDS*.**

—Internet Resources

Note: Internet sites are subject to change.

Advanced High Performance Manufacturing Skill Standards

National Skill Standards Project for Advanced Manufacturing. What manufacturing workers need to know and be able to do...Introduction.
http://www.bmpcoe.org/

Coop Ed Skill Standards

Cooperative Education Skill Standards…
http://www.dpi.state.wi.us/dpi/dlsis/stw/cestand.htm

Council on Hotel, Restaurant, and Institutional Education

Student Connection. Current Update. Benefits of Skill Standards.
Skill Standards Project info…
http://www.chrie.org/skillinfo_new.html/

Dictionary of Occupational Titles (DOT) Index

Dictionary of Occupational Titles (DOT) Index.
http://www.wave.net/upg/immigration/dot_index.html

Documents About Standards

Documents About Standards. Here are abstracts of projects to develop state curriculum frameworks and content standards
http://inet.ed.gov/G2K/doc-stan.html

Gateway: Bioscience Industry Skill Standards

ABSTRACT OF "GATEWAY TO THE FUTURE" "Gateway to the Future:
Skill Standards for the Bioscience Industry"
http://www.edc.org/CEEC/home/bioscibk.html

GOALS 2000: A Progress Report -- Table of Contents

GOALS 2000 A Progress Report Spring 1995
http://inet.ed.gov/pubs/goals/progrpt/index.html

Industry Based Skill Standards

Standards developed by the U.S. Department of Education and Labor.
Twenty-two industries are profiled.
http://vocerve.berkeley.edu/skillstand.htm

Making Sense of Industry-Based Skill Standards

Making Sense of Industry-Based Skill Standards (MDS-777) T. Bailey, D. Merritt.
http://vocserve.berkeley.edu/Summaries/777sum.html

MDS-777: Industry-Based Skill Standards

NCRVE Home | Site Search | Product Search | Events Calendar | Rate This Website.
http://ncrve.berkeley.edu/MDS-777/contents.html

Michigan Center for Career and Technical Education

MCCTE. Home.
http://www.mccte.educ.msu.edu

National Center on Education and the Economy

Home. Programs. Products. Prof. Development. What's New. Map
http://www.ncee.org/

National Center for Research in Vocational Education [NCRVE]

National Center for Research in Vocational Education
http://ncrve.berkeley.edu.Default.html

National Health Care Skill Standards Project

Interesting Allied Health Links. Jump to: Skills-Related Documents and Internet Sites.
Internet Resources for the Allied Health Professions.
http://www.wested.org/nhcssp

National School-to-Work Learning and Information Center

National Skill Standards Board. Definition: Established under Title V of the Goals 2000: Educate America Act, the National Skill Standards Board
http://wwwstc.cahwnet.gov/stwgloss/def32.htm

National Skill Standards Board

National Skill Standards Board Home Page | Links.
http://www.nssb.gov/

National Tooling and Machining Association

National Skill Standards Board Home Page | Links.
http://www.nssb.gov/

Natperf.htm

Summary: National Performance or Skill Standards-are another occupational resource for our technical programs. Check out the skill standard projects to see if your occupational area is being…
http://www.waukesha.tec.wi.us/homepage/natperf.htm

NCRVE's Skill Standards Page

NCRVE's Skill Standards Page. NCRVE's links to information about the 22 skill standards projects sponsored by the US Departments of Education and Labor....
http://ncrve.berkeley.edu/SkillsPage.html

NCRVE MDS-777: Executive Summary

Summary: Bailey, D. The skill standards movement has emerged from a conviction that technology and market changes have caused significant modifications in the types of skills and behaviors needed by workers on-line job.
URL: *http://ncrve.berkeley.edu/MDS-777/ExecSum.html*

NCRVE MDS-777: References and Skill Standards Pilot Projects

NCRVE Home | Site Search | Product Search | Events Calendar | Rate This Website.
NCRVE Home | Full-Text Documents | Contents | Previous Section | Next...
http://ncrve.berkeley.edu/MDS-777/Refs.html
http://ncrve.berkeley.edu/MDS-777/Projects1.html
http://ncrve.berkeley.edu/MDS-777/Projects2.html

O*NET - The Occupational Information Network

O*NET - The Occupational Information Network. The Nation's Primary Source of Occupational Information
http://www.doleta.gov/programs/onet/

Outcome Based Learning - A Background

From the fall of 1991 until September, 1994, Curriculum and Instructional Services staff prepared for the implementation of Outcome-Based Learning
http://www.yrbe.edu.on.ca/obl/bkground.html - size 3K - 25 Apr 96

Outcome Based Learning - Action Plan Summary

September, 1994 - December, 1995. The tasks defined in the "Strategic Action Plan for the Implementation of Outcome Based Learning in October 1994...
http://www.yrbe.edu.on.ca/obl/action.html

Outcome-Based Learning

Background: The York Region Board of Education introduced an Outcome-Based Learning (OBL) approach to curriculum to schools in York Region
http://www.yrbe.edu.on.ca/obl/obl.html

OVAE Skill Standards

States and communities across America are focusing on improving schools and raising student achievement. One important effort, supported by the U.S.
http://www.ed.gov/offices/OVAE/SkillStan.html/

Resource Center for Skill Standards and Work-based Learning

http://www.wa-skills.com

Resources

Extensive national and international literature review of the Skill Standards Research and Communications Project is stored in the Texas Skill Standards Repository.
http://www.coe.tamu.edu/~ehrd/skills/exsummry/rsrcs.htm

SCANSLINK

ScansLink. A product of the Texas Skills Standards and Certification Project.
"A professional development newsletter designed to instruct, inform, and provide feedback to educators."
http://www.dcccd.edu/nlc/misc/scans/slink.htm

Sites Offering Academic and Skill Standards

This is an annotated listing of sites emphasizing the development of state and national academic and skill standards as well as educational standards for the arts, civics, mathematics, and sciences. ...
http://www.ed.gov/G2K/standard.html

Skill Standards

NACFAM's skill standards work focused in three areas; The Research and development of skill standards for manufacturing funded by the U.S. Departments…
http://www.nafam.org/skill.htm

Skill Standards Links

| Home | Searches | Key Areas | Hot Spots | News Events | Links | Contacts | Tips | Skill Standards Links Skill Standards Making Sense of Industry-Based Skill Standards A Conceptual Framework for Industry-based Skill Standards Integrating.
http://connections.msu.edu/links/ss/index.html

Skill Standards Projects

Skill Standards Projects: agriculture, early childhood education, chiropractic, cosmetology, chemical dependency counseling, allied dental health, natural resources and environment, food processing, information technology, manufacturing technology advisory, patrol officer, wood products manufacturing…
http://www.wa-skills.com/projects.html

Skill Standards: Related Web Sites

[ETA Directives | Directories | Legislation | Press Releases | External Links] Skill Standards-Related Web Sites National Skill Standards Board SkillsNET NCRVE Skill Standards Page CORD Skill Standards Page National Health Care Skill Standards…
http://www.ttrc.doleta.gov/WWWBETA/chris/skillstd/old/sites.html

SkillsNET Corporation

SkillsNET. A service dedicated to the development and advancement of Skills and Skill Standards
http://steps.atsi.edu/

Standards: Making Them Useful – Assessment

Standards: Making Them Useful and Workable for the Education Enterprise – 1997 Assessment**.** Assessment and Testing are fundamental to any conception of a national standards system…
http://www.ed.og/pubs/Standards/assess.htm

TTRC – Skill Standard Home Page (TEXT)

General Information includes a fact sheet on skill standards, a fact sheet and information on the National Skill Standards Board (NSSB), Guiding Principles,
and the NSSB legislative charter.
http://www.ttrc.doleta.gov/skillstd/skillstdtxt.htm

Texas Skill Standards Research and Communications Project

Welcome to the Texas Skill Standards Research and Communications Project. Project Information. Skill Standards Literature Review. National Skills...
http://www.coe.tamu.edu/~ehrd/skills/sshomepg2.htm

Washington State Board for Community and Technical Colleges

http://www.sbctc.ctc.edu

What Are Industry Skill Standards?

What Are Industry Skill Standards? About NIMS. About Skill. Standards. What Are Industry. Skill Standards? Which. Metalworking. Industries Have Skill Standards.
http://www.nims-skills.org/pages/Indskil1.htm

What are Skill Standards?

As defined by the National Skill Standards Board, skill standards are "performance specifications that identify the knowledge,.
http://www.ocbbs.odessa.edu/public/oc/haz.mat/skillstandards.htm

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Other Readings

—Assessment II and International Dimension

[Article adapted from *Metropolitan Universities, an International Forum*, Summer 1993, Volume 4, Number 1, pp. 34-46.]—*Marcia Mentkowski and Glen Rogers*

Connecting Education, Work, and Citizenship

How Assessment Can Help

Complex, multidimensional abilities—such as problem solving and perspective taking—can make the connection between education, work, and citizenship, which, in turn, can rekindle public trust in higher education and stimulate college/work/community collaboration. How abilities are defined and assessed determines how useful they are to educators, employers, and the public. The authors demonstrate an assessment strategy that infers abilities from performance and compares alumni abilities with professional, national, and faculty expectations. The strategy helps educators to become more explicit about how learning transfers, and helps students to better meet immediate expectations for performance, envision future roles, and continue to learn in the face of rapid change.

A national consensus is emerging that college-level learning should enable students to work effectively and to contribute as citizens. But many observers of higher education believe that college graduates are not prepared adequately for work and citizenship roles. Critics argue that graduates have *neither* the technical skills to handle entry-level requirements, *nor* the qualities, like leadership, high-level interpersonal abilities, and "professional" values, that future-oriented organizations will need. Educators are coming to understand that new knowledge is quickly forgotten if students do not have opportunities to apply it while they are still in school. New learning should connect with more effective actions.

Complex, multidimensional abilities are needed to perform effectively in work, service, and family roles. Illuminating these abilities helps fulfill educators' contract with society by bridging the distance between college learning and professional and civic contributions. But how best can any college know whether and how education—however transformed—is connecting with work and citizenship?

Assessing Abilities That Connect Educator, Employer, and Public Expectations

Curriculum Experience

We draw on our experience at Alverno College, a four-year liberal arts college for women in Milwaukee, Wisconsin, with 2500 degree students. Seventy-five percent are first in their families to attend college; 22 percent are minorities; 84 percent stay in the metropolitan area after graduation. Since 1973, graduation from Alverno has required students to demonstrate eight specified abilities to an explicit level of effectiveness in the context of disciplinary or professional content: communication, analysis, problem solving, valuing, social interaction, global perspectives, effective citizenship, aesthetic response. Faculty have determined and taught these abilities in general education courses and in a variety of disciplines. They have made them explicit through criteria and assessed them in multiple modes and contexts through

their performance assessment system. Alverno has tested these abilities by collaborating with many other institutions and their faculty through a variety of consortia that cross the educational spectrum from elementary to professional schools.

Abilities fostered at Alverno such as *critical thinking, effective communication, problem solving,* and *effective citizenship* make sense to educators, employers, and the public and thus make connections among them. The abilities reflect faculty judgment of what students will need across their lifetimes, and reflect the experience of community leaders and professionals. Faculty have made a continuing effort to connect college learning with work by involving five hundred members of the Milwaukee business and professional community as trained assessors who give feedback to students on their performance as a regular part of the assessment process. In addition, an internship program, which carries college credits, requires every student, regardless of her major, to engage in semester-long projects in businesses, government agencies, or community organizations. In these off-campus situations, she continues to develop her abilities, which are jointly assessed by an off-campus mentor and a faculty advisor. This use of external assessors and mentors is part of the effort to integrate faculty standards with professional and community expectations for Alverno's 2500 degree students.

Even with the transformation of the curriculum to teach and assess explicitly for abilities, faculty realized they also had to invest in college-wide, in-depth studies of students and alumnae, and other professionals who are *not* Alverno graduates. Faculty asked, "Does college learning transfer to work and service and how does it happen? Are graduates prepared for future roles as well as entry-level ones, and which abilities last a lifetime?"

Institutional Assessment Experience

Our experience studying these questions shows that substantive institutional assessment can contribute to a broad consensus around what abilities our graduates need to perform effectively after college. Such assessment can identify abilities that are needed to function effectively in work and service roles, and indicate how they are related to what graduates have learned in college. In this way, assessment can connect the expectations of educators, employers, and the public. Our research confirms that *the idea of abilities makes sense to all three groups*. Thus, connecting these sectors implies assessing abilities within work and service roles in appropriate contexts, as well as in college. If institutional assessment studies create an adequate picture of these abilities, the results can simultaneously demonstrate accountability to external constituencies and improve teaching and learning on campus.

Of course, institutions will not assess all abilities that graduates will need, nor will educators and employers limit themselves just to what can be readily or currently assessed. Disagreements about what should be learned in college and what should be learned on the job will not disappear. Colleges will continue to emphasize abilities that cross roles and settings, and organizations will continue to focus on developing their employees' job-related skills. Nevertheless, a system that identifies abilities common to education, work, and service can clarify those abilities that make sense to all sectors because they are likely to transfer across them. This collaborative activity can bring new insights into delineating which components of abilities should be emphasized at work (such as *salesmanship*) and which in college (such as *perspective taking*).

Alverno researchers have used four distinct approaches since 1976 to determine how these abilities are developed: (a) longitudinal studies of student and alumnae outcomes; (b) studies of alumnae perceptions of the abilities used in the workplace, and of the value of learning in their own evolving life goals; (c) studies of abilities actually used by other

professionals who are not Alverno graduates; and (d) studies of abilities used by five-year Alverno alumnae. Our work has led to a central research finding: *individuals are effective in a range of settings because they use complex, multidimensional abilities and integrate them in performance.*

The Connecting Idea: Complex, Multidimensional Abilities That Are Integrated in Performance

"Ability" is a communicable idea that enables students, employees, and volunteers to connect what they know with what they are able to do. It provides a *conceptual framework* for understanding what student learning looks like when it is transformed later in work and service settings. How abilities are defined and assessed makes a big difference in how useful they are to educators, employers, and the public. We view abilities as *multidimensional*, as complex combinations of skills, motivations, self-perceptions, attitudes, values, knowledge, and behaviors. Abilities become a cause of effective performance when these components are integrated. We do not limit the definition of an ability to a unitary trait, a personality characteristic built into one's genetic code, or a skill like verbal ability. Thus, abilities are defined as *teachable*: Faculty can assist students to develop and demonstrate them through practice and assessment; graduates can continue developing them on their own; and employers can foster continued development at work.

Alverno faculty use performance assessment as a process integral to learning.

Abilities are transferable. An ability enables an individual to perform effectively across a wide range of situations, and in complex and novel settings. Our research convinces us that our students transfer their abilities across college courses and across disciplines. They transfer them from the classroom to internships off campus and to their personal lives.

Abilities become transferable because *the concept of "abilities" functions are an organizing principle for role performance and career satisfaction*. Because abilities are the frameworks on which our graduates and other professionals construct college-level learning, they can carry it with them once they leave college and move into a variety of roles. Although these persons use abilities they have learned in college, they also use abilities to create a theory of action that they test out in various work situations. They use abilities to plan, organize, and structure their performance at work. When Alverno alumnae are performing in situations that call forth their abilities, they experience job satisfaction. They perceive themselves as challenged by their work and competent in their role, which leads them to seek out additional situations that will yield similar feelings of confidence and fulfillment.

A complex, multidimensional ability cannot be observed directly; it must be inferred from *performance*. Alverno faculty use performance assessment—with explicit criteria, feedback, and self-assessment—as a process integral to learning by which educators diagnose, analyze, and give credit for students' development, and provide ways of understanding how to spur it forward during college. To generate post-college examples of performance for purposes of institutional assessment, Alverno researchers chose a related method—***behavioral event interviews***. Educators, employers, and government agencies in the United States, the United Kingdom, and other countries have successfully used this method. The interview collects information about performance in a particular context for purposes of assessment, and ultimately, for defining educational and training goals. These interviews can provide rich, connected descriptions of performance that make sense to educators, employers, and the public. Inferences drawn from the interviews can (a) demonstrate that college learning transfers;

(b) help compare alumnae performance to professional and societal expectations; and (c) identify and define developmentally those abilities that characterize effective and outstanding performance after college. The interviews prompt insightful discussion about effectiveness by faculty and community professionals. Performance examples stimulate questions about whether a particular performance is adequate given the situation, whether a professional has met the standards of his or her profession, whether an alumna has met the standards of the faculty, and what abilities should be developed in college and at work for future roles.

The behavioral event interview was developed by David McClelland and colleagues at McBer and company to measure multidimensional abilities in complex work situations, as part of *job competence assessment*. It is based on John Flanagan's critical incident technique. Alverno researchers have refined the method for alumnae studies, testing it out for work, family, and service roles. The Council for Adult and Experiential Learning (CAEL) has elaborated it for student and employee assessment. The interview is designed to demonstrate the abilities one uses in everyday activities, to capture an individual's performance in a particular context, including the setting, position, role, and responsibilities. The interviewee is asked to describe six critical incidents: three where he or she was effective, and three where things did not turn out as he or she intended. Because the interviewee is free to choose events, the interviewer collects information about the way in which the interviewee constructs the reality he or she experiences.

A trained interviewer asks the participant to describe the context for each event in turn, and then guides the interview with a series of questions and probes. These include: "what led up to the situation?" "who was involved?" "what did you actually *do*?" "what were you thinking and feeling at the time?" and "what was the final outcome?" The interviewer records behaviors the interviewee believes to be critical (as opposed to having an observer record any and all behavior), and also probes the thoughts, feelings, and intentions the person had while performing. Thus, research analysts can plausibly reconstruct actual behaviors performed, rather than interpretations or biased recollections of past behavior. All the while, interviewees interpret their behavior in light of the context and their intentions. We use nominations by peers or expert judges to select professionals who are outstanding performers; faculty and research analysts independently judge alumnae events for effectiveness, carefully considering specific actions in the context of the performance and the outcome.

Since 1978, Alverno faculty and research staff have conducted over five hundred behavioral event interviews of students, alumnae, and other professionals in the Milwaukee community. We have coded nearly 2,400 events, including over eight hundred from five-year alumnae. Our alumnae studies include events from work and personal life, including graduate learning, family, and civic roles. We code these events using abilities synthesized from several perspectives: (a) Alverno's perspective reflected in abilities Alverno faculty foster in the curriculum; (b) an external "work" perspective reflected in abilities from McBer and Company research, synthesized from over 750 job competence studies in organizations, and from Cambria Consulting, a firm that has studied abilities in over fifty Fortune 500 companies; and (c) a professional and community perspective reflected in abilities from Alverno studies of outstanding professionals in the Milwaukee metropolitan area who are not Alverno graduates. Information on our results, feasibility, and use of the method by other institutions is available from Alverno's Office of Research and Evaluation.

Connecting Strategies

Demonstrating Transfer of Learning to Work and Civic Roles

To illustrate how an institution might demonstrate that abilities do transfer to work and citizenship after college, we turn to a performance of a former Alverno student who was hired in a management position because of her education. She subsequently became a volunteer in an inner-city church, where she solves problems by taking the initiative and adapting her abilities to set up a temporary employment agency.

> *"I knew from my experience in a corporate structure that some people had no knowledge at all of what interviewing was about. I got all the study materials I used in the corporate structure...I revamped them and I started advertising that these classes would be going on in the church basement, and then I started teaching."*

Then she had to adapt again.

> *"I had to change everything to fit the people I was working with. Now this was my community, but I began to realize that people had never worked before. I knew they have never been in s structured interview environment and, or course, they didn't know how to go about the interview process. But I found they also didn't know how to fill out an application, and in some cases, they didn't know how to read."*

Once again, she revamped her approaches, and also created motivational strategies. What was the outcome?

> *"People who had never known what the word interview meant finally had a chance to become involved. People who didn't believe they could learn to read and write were getting to learn to read and write, thereby increasing their self-esteem. People looked at the church as in institution of learning. It took on a different role in the community than just a worship center. It took on a different role that was more effective."*

This case and others demonstrate that abilities are transferable: the alumna in this case uses her understanding of job interviewing to diagnose a key opportunity to make a difference in the community through training, and then elaborates her understanding to fit the population. The volunteer demonstrates abilities that are goals of most educators and of society. She accurately reads the feelings of those she is teaching, and, by working on her own time, she lets them know she really cares and that she is doing it for them. As a result, she evokes mutual care and responsibility in return.

> *"People who have succeeded...should be willing to give something back to the community. But I saw that this was really not happening...people like me get requests to help out...it would always be on company time. Doing something on my own time was the way to show people that they can succeed, that there are knowledgeable people who do care."*

Examples like these reinforce the local community's trust that our alumnae can be counted on to contribute as citizens and that abilities learning in college account, in part, for their success.

Comparing Alumnae Performance to Professional, National, and Educator Expectations

To illustrate how an institution might connect abilities developed in college and used afterward to professional, national, and their own faculty's expectations, we turn to a performance that shows an alumna using a range of abilities in concert. This five-year graduate of Alverno is in a novel, emotionally laden situation that she has not experienced before. Excerpts from this event allow us to examine both intellectual and interpersonal abilities in a "real world," fast-paced situation, where there is potential for harm or benefit to persons.

The work environment is a neonatal unit of a hospital. A premature baby is dying. The doctor and parents have made the decision to take this baby off the respirator. With the nurse in support, the doctor asks the parents if they want to hold the baby. The mother agrees. Aside, the doctor then tells our nurse, "We're going to take this baby off the respirator and you take it in and deal with the parents." The nurse comments to the interviewer:

> *"The doctor was too upset. He couldn't come in there. He just kept asking me, 'How's it going? How's it going?' It's real difficult for doctors to let their babies die."*

The parents and the nurse take the child off the respirator and the nurse gives the baby to the mother to hold for the first time since the baby was born:

> *"The dad stands back and you can see that he's torn up inside. I said to him, 'Do you want to hold her?' and he said, 'No, no, I don't want to hold her.' The mom says, 'Hold her, hold her,' and he won't do it. So I picked up the baby and I put the child in her dad's arms."*

Throughout this interview, the interviewer is skillfully asking questions that focus on what happened and what led up to the situation; what she actually *did*; who else was involved; what she was thinking, feeling, and intending at the time, and what was the result. The interviewer is gathering information about the combination of knowledge, motives, values, and skills that led to this decision. The nurse describes using several sources of information that led her to thrust the baby into the arms of the father. She has learned from medical research that:

> *"Parents who know what the baby looks like and who hold the baby have fewer ugly dreams. They're less likely to fantasize about the baby later and they feel less guilty about not having done enough for the baby."*

She has attended a course on death and dying. She also draws on prior conversations with more experienced nurses and recalls her observations that:

> *"Many nurses will not take a baby that is dying because they can't handle it."*

She also uses her experience with adults who were dying:

> *"I encourage family members to touch them because touch is very important, even if a person is dying. A lot of people don't like to do it in our society."*

We learn how her values relate to her decision to actively intervene:

> *"I can handle it because I feel that God is taking care of these babies. We've done whatever we can and now it's His turn to take them. God takes care of us, you know. He puts us through a lot but we're probably stronger, more aware of our feelings, even though it's hard to say that sometimes in the beginning."*

What happened when she put the baby into the father's arms?

> *"He just threw the baby back at me. I said, 'No, no, just hold her.' And he calmed down, and he rationalized it all, and he was very appreciative of what had happened. The baby died in both their arms. So it was very gratifying when the dad came back later and said, 'I really appreciate what you did for us, and it was real important for me that I did that thing for my baby when she was dying'.'*

The nurse's performance reflects integrated components of several abilities. For example, it displays elements of *helping*, *influencing*, and *coaching*. *Helping* is a nursing ability common in the profession; because it entails judgment, it is very complex. *Helping* involves taking action to personally help a patient or subordinate, or demonstrating a concern for the other person's needs, where both the nurse and the person she is helping are seeking the same goal. However, the nurse is doing more than helping these parents get through a crisis situation. She is constructively *influencing* the behavior of the parents. In our study of nursing professionals who are not our graduates, only the most experienced and educated nurses do this. Here, our alumna compels the father to hold the dying child in his arms because she believes that this will ultimately lead to a more positive result for him and his wife. We also see her goal of lessening the father's potential guilt. Here we infer an ability that is even more sophisticated. *Coaching* involves influencing and supporting others to take greater responsibility for important tasks. By studying the performance of abilities, educators can improve teaching and assessment back on campus, and can show accountability to professional standards.

But the public is no longer satisfied to leave the accountability question to educators and professionals alone. It wants to know "How are your graduates doing?" Admittedly, the public interest is vague and undefined. But educators and the professions can work to describe the specific abilities that characterize the most effective performance, and can then inform the public interest by describing these broad abilities in context. Then, public representatives can enter this discussion, where appropriate, and contribute to setting standards.

Consequently, it is important to step back from individual cases, synthesize across them, and make even broader comparisons to determine which abilities best describe *effective performance*. As an example, let us return to the Alverno study of five-year alumnae abilities. *Taking initiative* is frequently coded by research analysts in one sample of eight hundred events. It is also coded frequently in our studies of other professionals, particularly managers and executives, as well as nurses. It involves taking actions, often in situations that include organizational or interpersonal barriers, and demonstrating the persistence, emotional stamina, and personal responsibility needed to act effectively.

Other abilities discriminate or describe even better the more effective alumnae performances. More effective alumnae, for example, are strongly motivated to do something better, to strive for a standard of excellence. Effective graduates also continuously seek out opportunities where they can take action to use time more efficiently and resources more wisely. We also see intellectual abilities like *conceptualization*, *information seeking*, and *diagnostic pattern recognition*.

The most effective alumnae are also more likely to show *positive regard*. This is the psychologist's term for faith and hope. That is, they show respect for others and they see them as capable and worthy individuals; the nurse did not denigrate the doctor for leaving the situation or the father for not wanting to hold the baby; the volunteer focused on her clients' potential rather than their limitations. The more effective graduates are also likely to act toward *developing others*, taking action not just to achieve something, but also to develop potential.

We still have the problem of educators' expectations. How do these abilities compare to what educators want? Educators have the greatest stake in a different set of abilities that make up what they would label *perspective taking*. *Perspective taking* is at the heart of a liberal education. Most educators believe that it makes a difference in performance. In the alumnae coding scheme, *sensitivity to individual difference*, *accurate empathy*, *reflective valuing*, and *perceptual objectivity* are abilities that resonate to this overarching one. To illustrate *perspective taking*, let us return to the nurse in the neonatal unit. She learned that she could help this family go through the dying process and discovered a highly effective action that worked well in that situation: Just taking the baby and putting it in the arms of the father. But faculty want to know if she blindly uses this same strategy in the next situation. In an almost identical situation, the nurse described sitting with another set of parents:

> *"In this particular culture, the women have to do everything for the baby. It's for the dad to be staunch and that's how he was. But he did touch the baby and I think that at that point, it was my decision that was enough. I would not make this man hold this baby. So I don't just blatantly say, 'You have to hold your baby.' You have to determine the culture and what you're dealing with, because in that situation it was different."*

Perspective taking, as characterized by *sensitivity to individual differences*, is determining what the nurse does. Because perspective taking is central to liberal education, faculty are especially interested in how this ability relates to alumnae performance after college. Based on our studies of Alverno alumnae performance five years after college, the workplace requires a more basic kind of perspective taking and does not seem to correspond entirely to Alverno faculty's more sophisticated definitions. Alumnae do show *perceptual objectivity*, a nonjudgmental understanding of another's perspective when it is different from their own. This ability is associated with the level of their career achievement. Our alumnae also often demonstrate *reflective thinking* and *valuing*. They reflect on their own behavior, feelings, and beliefs, and this reflection results in a continuing search for new insights about themselves and their values. They also relate their values to their actions and decisions and show sensitivity to *individual differences* and *accurate empathy*. They use awareness of their own role and the role of others in the group in shaping the work and deciding about the process. But faculty expect still more.

Alverno faculty were hoping to see alumnae performances at the upper reaches of faculty-defined perspective-taking.

Alverno faculty were hoping to see alumnae performances at the upper reaches of faculty-defined perspective taking. The arts and humanities faculty expect an alumna to make personal judgments only after examining multiple contexts and multiple perspectives, and, even then, to recognize the limits of her judgment. They expect her not only to discuss similarities and differences she sees between various world views and her own, but to go beyond knowing the values of others to imagining what it is like for them to hold these values. They expect her to enter into other perspectives in an attempt to appreciate their values more fully, and to enable herself to use different points of view to address significant issues. For example, when a group of Alverno humanities faculty were looking through cases for perspective-taking abilities, they also wanted to see evidence that alumnae valued understanding another's perspective for its own sake. They expected alumnae to be engaged in a continuing effort to expand their own basis for judgment and understanding—quite independent of the immediate benefit of knowing another's position so that she can advance her own preexisting commitments or organizational goals.

Perceptual objectivity does, however, provide alumnae with the cognitive potential for reaching beyond the conceptual frameworks that currently shape their consciousness. For example, alumnae effectively mediate divergent viewpoints and actively explore complexity instead of ignoring or stepping around it. The most sophisticated alumnae withhold judgment, work to understand and integrate diverse views, and challenge their own understanding. But alumnae were not likely to describe situations where they recognized that some assumptions that others held were so different that they could not expect to reconcile them with their own. Thus, work situations that alumnae described to not seem to demand the highest form of this humanistic ability, at least by five years after college.

But there are hints that the higher forms of perspective taking are critical to the workplace. We believe that employers who are coming to understand that this ability is essential for dealing with a global economy will work with educators to develop sophisticated varieties. For example, Alverno management faculty and a major corporation are now forging an alliance to develop international business simulations that teach perspective taking.

The research findings support the emphasis that our own institution places on the development of *valuing in decision making*, a vital, complex interaction that is summoned whenever an individual is called to consider her commitments and goals in multiple contexts and roles. Here at Alverno, faculty teach and assess for this valuing ability across the curriculum and review alumnae cases to clarify how this and related abilities are exercised in complex performance five years after college. In the last three years, Alverno faculty have expanded the definitions of the valuing abilities to illuminate the integration of knowledge, ethical judgment, and action. They are paying careful attention to elements such as *showing moral sensitivity* and *contributing to the development of values in the broader community*.

Alumnae examples of abilities such as *perspective taking* and *valuing* five years after college further illuminate the abilities that employers, the public, and faculty really want to see: Persons with integrity who can be trusted with *leadership*, who can execute our shared human values, and who make effective decisions that benefit us all.

Benefits of Connecting Education, Work, and Citizenship

Connecting education, work, and citizenship can help educators discern complex, multidimensional abilities that are integrated in effective and outstanding performance and that are essential for new roles at work and service in a future society. These connections help define abilities broadly enough for college learning and ensure that abilities can be linked to specific roles and settings, all the while providing a basis for refining assessment criteria. They expand faculty understanding of how abilities are performed in the complex dynamic of daily life, and how abilities transfer to situations alumnae are likely to experience.

There are some overall benefits for everyone. Abilities become defined *developmentally* for college learning. For example, developmental differences between helping, influencing, and coaching in nursing performance already help educators challenge and support students step-by-step toward more sophisticated performances; graduates can use this picture to continue improving on their own. Employers can also use developmentally sequenced ability definitions to assist individuals to advance in the workplace. Together, both sectors can create improved performance criteria and standards. Good examples can show how a performance is integrated, how it is adapted in roles and settings, and how it continues to improve. Good examples can show how our noblest and highest goals as educators and the most pressing needs and expectations of society can be interwoven into a seamless vision of integrated performances and abilities. Assessing abilities that connect college learning with work and

citizenship can develop consensus around what to teach and how to assess, ensure a broader accord on educational goals and standards, and create a clearer vision of effective post-college performance. While such efforts require a joint investment of educators, employers, and public representatives, such evidence—that graduates can meet and exceed faculty, professional, and national standards—has the potential to rekindle the public trust in higher education.

Note

This article is base on Mentkowski's 1991 paper commissioned by the U.S. Department of Education ("Designing a National Assessment System: Assessing Abilities That Connect Education and Work") and her subsequent presentation ("National Expectations and Institutional Responsibility: Connecting Education, Work, and Citizenship Through Assessment") at the Seventh AAHE Conference on Assessment in Higher Education in Miami Beach, June 1992.

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Guidebook Volume II
PERFORMANCE *ASSESSMENT* *and CURRICULUM DEVELOPMENT*

Section XV

Definitions and Glossary of Performance Assessment Terms

—Definitions

***Academic Content Standards*:** Benchmarks for expected student outcomes pegged high enough to ensure the ultimate goal of a well-prepared and highly skilled workforce.

Academic Skills: The underlying knowledge and skills represented in the core subjects of the educational curriculum. Examples include language, mathematics, and science.

Certification: The awarding of a certificate or recognition to an individual, indicating the successful performance of a set of critical work functions and an underlying set of academic, employability, and occupational knowledge and skills for an industry/occupational area or a specific occupational or industry-related specialization.

***Competencies*:** Competencies are descriptions of specific abilities required in the workplace to ensure workers' success. These abilities may take the form of knowledge, skill, attitude, judgment, or task.

Competency-based Instruction: A method of instruction whereby—

- Skill and knowledge standards essential for employment and further education are determined by task analysis and validated by business, labor and other technical experts.
- Learning objectives, derived from validated performance tasks, are criteria-based and measurable.
- Teachers facilitate learning using flexible methods and times that entitle each student to master specific skills and knowledge.
- Student success is based on the ability to demonstrate specific skills and knowledge.

***Critical Work Functions*:** Distinct economically meaningful sets of work activities which are: (1) critical to a work process or business unit; (2) are performed to achieve given work objectives; and (3) have definable performance criteria.

DACUM Charts: A DACUM chart is used in curriculum development, worker training programs, and needs performance assessment for identifying job task processes; usually involves 8-15 workers and supervisors generating the information in focus groups with a trained facilitator.

Duty: A duty consists of the major sub-divisions of a job which are similar in nature and are composed of two or more related tasks in each area. Two or more duties make up a job.

Employability Skills: Generic skills that are related to the performance of critical work functions across a wide variety of industries and occupations. Examples include problem-solving, teamwork, and leadership.

Industry/Occupational Clusters: For any economic sector, a group of industries and/or occupations that reflect the way work is organized now and in the future.

Job: A job is a grouping of related parts of work into broad function areas or general areas of responsibilities. There may be one person or many people at the employment site doing the same job. A single duty/task analysis usually covers a complete job.

Job Analysis: The job analysis is the process of using job descriptions, Dictionary of Occupational Titles, or subject-matter experts to develop a list of job tasks to be validated by industry experts.

Performance Assessment: A process for measuring performance against a set of standards through examinations, practical tests, observed performances or projects.

Performance Criteria: Specific behavioral evidence of workers' job achievements, knowledge and tasks. Answers the question "How do we know this task or work function is performed well?" The criteria are public and explicit.

Performance Objective: A statement in measurable terms of what the learner must do to master a task or outcome. It consists of three parts: (1) the conditions under which the task or outcome will be performed for evaluation; (2) a description of the task or outcome; and (3) the standard or criterion which states how well the task or outcome must be performed to meet job expectations.

SCANS Skills: Basic academic and behavioral skills identified by the Secretary of Labor's Commission on Achieving Necessary Skills that are needed to build more advanced competencies.

Foundation skills fall into three domains—

- Basic skills - reading, writing, speaking, listening, knowing arithmetic and mathematical concepts.
- Thinking skills - reasoning, making decisions, thinking creatively, solving problems, seeing things in the mind's eye, and knowing how to learn.
- Personal qualities - responsibility, self-esteem, sociability, self-management, integrity, and honesty.

Competencies—

- Resources—management of time, budget, materials and human resources.
- Information—acquiring, organizing, interpreting and distributing information; and the use of information technology.

- Interpersonal skills—participation, helping others learn, serving customers, exhibiting leadership, negotiating, and valuing diversity.
- Systems—understanding the organizational system, monitoring and correcting system performance, and improving system performance.
- Technology—selecting appropriate technology, applying technology and maintaining technology.

Skill Standards: Employer-defined knowledge and skills that are needed by employees to ensure success on the job. Standards are defined by occupational areas and validated by representatives from the occupation. Standards include the functions, tasks, and performance criteria for a job area; and identify the knowledge, skills and abilities needed to meet performance expectations.

Task: A task is made up of measurable and observable work activities which end in a product, service, or decision. It has a definite beginning and end. Each task is composed of a series of logically arranged and necessary work activities. Two or more like tasks make up a duty area.

Task Analysis**:** The task analysis is the process of identifying measurable and observable work activities which end in a product, service, or decision and utilizing an advisory committee or panel of subject-matter experts to validate the tasks.

Technical or Occupational Knowledge and Skills: The underlying knowledge and skills required to perform the work functions within an occupation.

Voluntary Partnerships: Collaborative efforts among business, labor, education, training, and community-based organizations to establish and maintain skill standards and certification systems for an economic sector. These voluntary partnerships may seek and receive recognition from the National Skill Standards Board for their qualifications and endorsement systems.

—Glossary of Skill Standard Performance Assessment Terms

***Attainment*—**What standards an individual can demonstrate, regardless of where it has been learned.

***Authentic*—**Representative of the "real" world. Authentic performance assessments ask students to solve the kinds of problems encountered in daily life or the workplace. An authentic *task*, whether done in class or as homework, asks the student to do something he or she might really have to do in the course of his or her life, or to apply certain knowledge and/or skills to situations he/she might really encounter.

***Authenticity*—**Produced by the individual being assessed; it is their own work. Team activities will be useful to demonstrate the skills and abilities to work effectively with others, not necessarily the total end results. The individual can if possible, identify their part of the team project to demonstrate evidence of their own results. *[One of four criteria for performance assessment process and results to be used when designing Skill Standards performance assessment for your educational course or training session.]**

***Behavior Observation*—**Observation of behavior directly or indirectly demonstrating skill standard task achievement; information gained through one's senses—visual, auditory and so forth.

***Content Standards*—**Statements about what it is that students must know or be able to do in various curricular areas such as English language arts, mathematics, science, and social studies. Descriptions often include desired learning goals.

***Competencies*—**Competencies are descriptions of specific abilities required in the workplace to ensure workers' success. These abilities may take the form of knowledge, skill, attitude, judgment, or task.

***Criterion Referenced Tests*—**Often contrasted with *norm-references tests*, criterion-referenced tests compare a student's performance against some pre-established *student performance standard* or a set of explicit scoring guidelines.

***Currency*—**That is, it calls for a demonstration of the current standards of the industry. *[One of four criteria for performance assessment process and results to be used when designing Skill Standards performance assessment for your educational course or training session.]**

***Curriculum*—**(1) An educational program which may include a program of studies, a program of activities, and a program of guidance; (2) an operational plan for instruction that details what students need to know, how students are to achieve the goals, what teachers are to do to help students develop their knowledge, and the context in which learning and teaching occur.

***Embedded Assessment*—**Performance Assessment activities which are part of the ongoing classroom instructional program.

Exhibitions—A form of performance assessment in which students prepare and display the products they have created in the course of their studies.

Extended Tasks—Assignments that require sustained attention for a key skill standard function, often carried out over several hours or longer. Such functions could include analysis, evaluation or implementation.

Evidence—Demonstration of achievement of the skill standard; could be evidence of actual performance or evidence of underlying knowledge, skills and abilities.

Informed Feedback—The student received relatively immediate and specific information on his or her performance to the standard; when the student misses the mark, correction is provided.

Integration—The idea that more than one *discipline* can and should be taught or assessed at the same tie, or that behaviors of thought (problem solving, referencing, etc.) are not the exclusive domain of any one *discipline*. Integrated instruction connects subject areas in ways that reflect the real world. For example, a student's writing in his/her science or social studies class can serve as a sample of writing for performance assessment purposes. The literature studied in English class can reflect and be taught in concert with history or world cultures units.

Norm-referenced Test—Tests that compare students to one another rather than to achievement of criteria. For example, the performance of a third grade student in reading might be compared to the performance of a random sample of third grade students chosen from throughout the United States.

Overarching Statement—Relatively brief, very general statements that describe what students should know and be able to do or the attitudes and habits they should have in various content areas. They should reflect the best and most up-to-date theory and research in that area. They are more general than *content standards*, but provide a framework into which *content standards* can be organized.

Performance-based Assessment—A testing activity which requires the student to construct his/her own answer to a question rather than selecting the right answer from a given list of possibilities.

Portfolio—A systematic and purposeful collection of a variety of materials related to student learning or evidence of standard achievement. The essential contents of both instructional and performance assessment portfolios are samples of student work in important learning activities, student, teacher and parent reflections on those samples, and any other relevant information that documents a student's developmental status and progress over time.

Probe—A special performance assessment format that is well suited to skill standard performance. Probes are brief (usually three minutes or less) timed, and frequently measured to note progress.

Proficiency—A particular level of performance, e.g., "meets or exceeds the standard." A description of what a person understands or can do.

Progress Evaluation—Direct frequent measurement of the student's progress toward achieving the skill standard; data of the student's performance and progress are used to plan learning activities.

Project—A form of *performance assessment* done alone or with other students. Projects require students to do significant pieces of work such as research papers, field work involving scientific analysis, musical performances and the design and construction of working models.

Reliability—Accuracy or consistency of results. A reliable test is one which, when administered to the same student a number of times under similar testing conditions, will yield essentially similar results, given that the student receives no additional instruction between test sessions.

Rubric—Scoring criteria based on a numerical scale. Descriptions of what to look for in a student response to an *open-ended question*. Rubrics may be pre-defined or may be created after reviewing a number of student responses to the question.

Sufficiency—Enough evidence is collected to match the key task and the performance criteria included in the Skill Standards. *[One of four criteria for performance assessment process and results to be used when designing Skill Standards performance assessment for your educational course or training session.]**

Validity—The degree to which a performance assessment measures what it purports to measure and its results can be generalized across *tasks*—that is, it clearly relates to the relevant standards (examples of this would be a sample of a simple CD animation for a Digital Media Specialist, a video presentation of a mini-lecture for a teacher or trainer.) *[One of four criteria for performance assessment process and results to be used when designing Skill Standards performance assessment for your educational course or training session.]**

Writing Prompt—A statement given to students to which they are to respond in writing.