

Manufacturing Skills Certification:

A New Fast Track for Regional Innovation

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A milestone in the history of American workforce and economic development will take place on November 15 of this year, when the Manufacturing Skill Standards Council (MSSC) launches a new certification system designed to prepare a generation of American workers to meet the challenges of globalization. The system will assess worker skills and knowledge based on industry-validated standards for all manufacturing sectors, leading workers to the nationally recognized certification of “Manufacturing Production Technician.”

For the economic development community, the advantages of certifying incumbent workers, dislocated workers and students are obvious. Regions impacted by technological change, trade disruptions, company relocations or declining economies will have the advantage of a flexible workforce prepared for rapid retraining and transfer to other industry sectors – including new types of manufacturing in fields such as bioengineering, nanotechnology and microelectronic mechanical systems.

On the front lines of global competition, manufacturers have increased productivity by stepping up their investments in advanced product and process technologies. As a result, manufacturing today requires a higher level of foundational skills. A workforce with broad-based skills will enable companies to shift more rapidly to new process technologies that transform the way products are made, such as smart systems, reconfigurable tools, modeling and simulation, advanced sensors and solid-free form fabrication. The fact that the MSSC skills are rooted in manufacturing makes certification an especially robust tool for accelerating this transition.

The MSSC certification system also will:

- Help regions gain a competitive edge against low-wage/high-skill countries such as China and India by accelerating innovation, America’s principal advantage in the global economy;
- Secure investment from advanced manufacturers with high-wage, high-skills jobs and “new industries” that all economic developers are trying to attract;
- Leapfrog sluggish educational reform to prepare individuals for successful employment in advanced manufacturing firms in a matter of months, not years;
- Strengthen the math, science, and English skills so vital to workforce success by teaching them within a contextual, work-oriented framework; and

- Quickly create and document just the kind of workforce for which industry is clamoring.

In addition to increasing a region’s productivity and competitiveness, MSSC Certification should enable significant cost savings for economic developers. The efficiency and economies of scale realized through this single system for essential skills can then be used for specialized efforts in economic fields unique to each region.

Focusing on foundational skills

A unique feature of the MSSC system is that it is built upon standards for *foundational* skills and knowledge. It assesses and certifies individuals on their abilities in math, science, reading, listening, communicating, computer technology, analysis, problem solving, teamwork and basic technical skills, all in a manufacturing context.

The MSSC’s focus on foundational skills represents a paradigm shift in workforce development. Building upon the centuries-old tradition of the craftsman or artisan, industrial workforce education and training typically has rested on the assumption that an individual would spend a lifetime in a single occupation, such as machinist, mechanic, electrician, welder, tool and dye maker, metalworker or electronics technician.

MSSC is changing that tradition by certifying individuals who are equipped with the foundational skills needed to fill a wide variety of occupations over a lifetime. Innovative and often disruptive technologies will alter or eliminate existing occupations and create new ones at an accelerating rate. By definition, the next-generation workforce must be agile and fully capable of adapting to change.

System elements

Since its selection in 1998 as the “Voluntary Partnership” for

the manufacturing sector by the U.S. Department of Labor's National Skill Standards Board, the MSSC has been building the critical elements of its certification system. Those include:

- The creation of industry-led standards for all sectors of manufacturing, applicable to some 12 million production and production support workers (the only standards fully endorsed by the National Skill Standards Board);
- An on-line, state-of-the-art assessment piloted with 1,500 tests given in multiple regions of the nation;
- A system of industry-recognized credentials, including assessments in four areas – Manufacturing Processes and Production; Quality Assurance; Maintenance; and Health, Safety and Environmental Assurance – leading to full certification of “MSSC Production Technician;”
- A growing network of MSSC-authorized assessment centers; and
- A new textbook and instructor's guide published in collaboration with Glencoe/McGraw-Hill, which provides a curriculum framework based on MSSC standards.

The textbook is a guide to mastering foundational skills in all 14 manufacturing sub-industries, helping workers identify and fine-tune skills for entering, advancing and moving confidently throughout the manufacturing industry. It includes manufacturing case studies and career and employment advice from industry employers and experts. The textbook is specially geared for certification by including a full page of MSSC Certification Test Prep practice items at the end of each chapter.

MSSC is a comprehensive, integrated system, grounded in skill and knowledge needs defined and validated by 4,000 front-line workers, 700 companies, and over 300 subject matter experts. The importance of a systems approach was underlined by a July 2005 RAND report, “Education and the New Economy,” which welcomed the rise of industry-led skill standards, but called for a “coherent system” within industry sectors.

Benefits to companies

The skills gap is a major barrier to innovation. A 2005 Deloitte Touche survey of 500 technology CEOs reported that the “main barrier to growth is finding, hiring and retraining qualified people to support technology companies' ambitious growth goals.” From the company perspective, the MSSC assessment and certification system will:

- Enhance the attractiveness and professionalism of manufacturing jobs, thereby aiding manufacturers in securing employee motivation and retention;
- Provide a diagnostic tool for manufacturers to assess the level of critical skills and knowledge in their present workforce;
- Increase ROI for training by targeting training to only the most critical job-related success factors (the “must know” and “must do”);
- Decrease recruitment costs by providing a certification credential manufacturers can use in the applicant

screening process;

- Assist manufacturers in selecting workers with higher levels of productivity, responsiveness and competitiveness; and
- Build a stronger national pipeline of motivated and qualified workers coming out of public, private and industry-based education and training providers.

At present, manufacturers are hard-pressed to realize benefits of this magnitude. For example, 80 percent of manufacturers still report a shortage of qualified workers and 78 percent cite failures in education and training systems as the cause. Only 17 percent of Americans graduate with science or technology majors, while the average among industrialized states is 27 percent (52 percent in China and 34 percent in Korea).

MSSC certification also articulates well with specialized national certifications in specific occupations and advanced industrial skill areas, such as certifications by the American Chemical Society, the Society of Plastics Industries, the National Institute of Metalworking Skills and the American Welding Society. Thus there is a smooth career pathway for individuals wishing to move from foundational skills into more specialized areas.

An example from the automotive sector

A good example of the kind of system that MSSC is putting into place can be found in the automotive repair arena. In response to customer demands in the 1970s for more reliable service, the Big Three automakers supported the development of a national certification system. With their support, a nonprofit foundation developed the Automotive Service Excellence (ASE) certification system. As a result, “ASE” logos are found in automotive repair facilities everywhere in the nation.

ASE has proven to be a winner for all stakeholders. Employers use this certification to facilitate recruitment and hiring decisions. Auto technicians use “ASE” certification as a way to document their skills and to secure a nationally recognized, portable credential. Consumers like us benefit, because we have a higher level of confidence that our automobiles will be properly serviced.

Today, over half of the nation's automotive technicians are ASE certified. By contrast, the level of certification in the manufacturing sector is very modest. According to the U.S. Department of Labor's “Occupational Outlook” series, fewer than 15 percent of the 110 occupations listed under “Production” have any form of skills recognition (i.e., certification, AA degree) beyond on-the-job training. A region that supports an MSSC certification system for its manufacturing workforce can use it as a key tool to attract manufacturers to the region.

Effectiveness requires partnership

Effective use of the MSSC system will require economic developers to work closely with other key organizations in their states and regions. Foremost among these is the employer community. Economic developers can facilitate

dialogue between the MSSC and industry leaders and work with MSSC to establish industry advisory boards. Unless companies are willing to reward individuals for securing MSSC certification through hiring, training or promotion, there will be little incentive for the individual to seek certification.

Another critical partner is the technical high schools and community-technical colleges where much of the preparation for the MSSC assessment will take place. In the regional MSSC pilots, community colleges are playing a critical coordination and training role. These include San Bernardino Community College in Southern California, Milwaukee Area Technical College in Wisconsin, and Ivy Tech Community Colleges in Indiana. The federal- and state-supported Manufacturing Extension Partnerships (MEPs) also can be valuable partners in building an MSSC certification system, especially with small and medium-sized manufacturers with fewer than 500 employees.

Interest and investment in the MSSC certification system has been high. Organized by the National Council for Advanced Manufacturing (NACFAM) and the AFL-CIO Working for America Institute, the MSSC has attracted about \$9 million in public and private investment. Since 1998, MSSC member organizations have included some 247 corporations and trade associations, 48 unions and professional societies, and 392 education and public interest organizations. In addition, the MSSC followed a meticulous process to ensure that its standards met all the criteria for due process and absence of racial or gender bias.

Most importantly, advanced manufacturers attracted by MSSC certification can serve as a powerful engine of economic development. The manufacturing sector has the unique attributes of being the leading investor nationwide in research and development, having the highest productivity growth rates, and paying some of the highest wages and benefits. Manufacturing also has the greatest multiplier effect. Each manufacturing job creates about twice as many jobs in service industries directly related to manufacturing, such as transportation, marketing, installation and repair, information technology and finance.

It is time for the economic development community to leverage this investment. While the MSSC is a national system, economic and workforce development professionals and local officials should integrate it into their regional innovation strategies to spur entrepreneurial activity and attract private sector investment that results from the creation of a high-skill workforce.

For more information on the MSSC, visit www.msscusa.org or contact the author at redaryl@nacfam.org. ★★

Skill Standards Overview

The MSSC skill standards have two major components. They are:

Information About the Work

This component describes competent performance on the job. It includes:

- **Critical Work Functions:** The major responsibilities of work within a concentration.
 - **Key Activities:** The major duties or tasks to carry out a critical work function.
 - **Performance Indicators:** Ways to judge when someone performs each key activity competently.

Information About the Worker

This component describes what a worker needs to know and do to perform the work of each critical work function. It relates to the key activities and performance indicators. There are three types of knowledge and skills measured:

- **Academic Knowledge and Skills:** Skills such as science, reading, etc.
- **Employability Knowledge and Skills:** Broad skills such as working in teams, solving problems, etc.
- **Occupational and Technical Knowledge and Skills:** Skills specific to an industry or concentration. Examples include using inspection tools, or knowledge of manufacturing processes.