The Manufacturing Predicament

Gerald Shankel, President and CEO, Fabricators Manufacturers Association, International

It’s been America’s “signature” since the Industrial Revolution when machinery, factories, and mass production became our hallmarks, and inventiveness, innovation, and ingenuity became our trademarks.

Financial pundits, business leaders, and government officials — past and current — assert manufacturing represents this country’s economic engine and serves as the catalyst for prosperity.

And, it’s not just the experts and the data that recognize manufacturing’s importance. A 2010 national study of Americans sponsored by The Manufacturing Institute and Deloitte revealed more than three quarters of respondents — 78 percent — believe the manufacturing industry is very important to our economic prosperity, and 76 percent view manufacturing as critical to our standard of living.

Despite such value placed on U.S. manufacturing, its influential “signature” currently is not a bold flourish, but a shaky, subdued script. Yes, the worst economy since the Depression and years of job losses to low-wage countries have been devastating. But the economy already shows signs of a comeback with manufacturing leading the way, and there is a growing recognition that outsourcing jobs overseas will decrease.

Yet, many are not ready to predict that a vibrant U.S. industrial environment is on the horizon. The reason? Manufacturers simply cannot find the skilled labor needed today to handle the sophisticated production processes and tasks required on the manufacturing shop floor.

It is a remarkable contradiction. Companies cannot find workers in an economy still reeling from months of double-digit unemployment rates. Yet, research and real-life scenarios support what for many is counter-intuitive:

- The 2010 Manpower Talent Shortage Survey revealed that among the most difficult U.S. jobs to fill today are those in the skilled trades.
- A recent CBS News segment reported the number of open manufacturing jobs doubled in one year to 227,000, yet many are not filled due to a shortage of skilled workers.
- PBS Newshour reported in December 2010 “there is an unfilled demand for highly skilled, highly educated personnel in the manufacturing sector.”
- The state of Pennsylvania predicted a shortage of 15,000 to 17,000 workers in precision manufacturing and industrial maintenance over the next decade.
- The president of Chicago-based Laystrom Manufacturing reported he searched for four months before he found a maintenance worker who could operate the firm’s sophisticated laser-cutting machinery.

As more and more baby boomers retire, the problem is expected to accelerate dramatically.

How Did This Happen?

How and why is manufacturing facing this remarkable dilemma? A confluence of factors:

Manufacturing’s Image Problem

There’s no doubt manufacturing has an image problem — especially among today’s youth. Unfortunately, the stereotypes of backbreaking labor and grimy working conditions persist. Ask people today what they think of manufacturing and most will probably describe a dirty, dangerous place that requires little thinking or skill from workers and offers minimal opportunity for personal growth. Of course, this is totally inaccurate.

Today’s manufacturing jobs are “cool” and appealing. Workers are required to operate the most advanced, sophisticated equipment and automated apparatus in the world. They can cut steel with laser lights, water jets, and plasma cutters, and program robots to paint, package, and palletize products. Computer programming and other high-tech skills are needed, which dovetails precisely with what younger people relish.

For now, youth remain unconvinced. A national poll of teenagers underscored teens’

disinterest in manufacturing. The poll, sponsored by Nuts, Bolts & Thingamajigs (NBT), the Foundation of the Fabricators & Manufacturers Association (FMA), showed a majority of teens — 52 percent — have little or no interest in a manufacturing career and another 21 percent are ambivalent. When asked why, 61 percent said they seek a professional career, far surpassing other issues such as pay (17 percent), career growth (15 percent), and physical work (14 percent).

A Nation of 'Non-Tinkerers'

Reinforcing this mindset is American adults' disinterest in the manual arts. Another NBT poll revealed a nation of "non-tinkerers," with 60 percent of adults avoiding major household repairs, opting instead to hire or enlist someone else. Some 58 percent said they never have made or built a toy and 57 percent state they have average or below average skills at fixing things.

These startling findings tell us young people essentially have no role models when it comes to repairing things themselves or taking pride in building something useful.

Education System Falls Short

Education priorities today rarely position manufacturing as a preferred career choice. Two dynamics are primarily responsible.

First, without question, in recent years many cost-conscious school districts dropped vocational programs and shop classes to better balance their stretched budgets. These actions were happening even before the current economic crisis. According to Dr. Chris Kuehl, economic analyst for FMA, "Only 6 percent of all the high schools in America offer shop classes. In addition, technical schools don't have the fiscal capability to keep up with the rapidly changing technology now found in manufacturing facilities. Students are not trained in the skills and technologies employers need."

The second factor: High school principals and counselors often fail to realize that manufacturing is a viable career option for students, directing them instead to typical four-year university programs. The education system theoretically should prepare our children for the future, yet does not expose them to skills and fields that offer significant opportunities.

These perspectives were reinforced in a new survey of FMA members. When asked how to best improve the skill sets of new employees, the leading answer, cited by 66 percent of respondents, is "more focus on careers in manufacturing in traditional school systems via curricula, school counselors, and other means."

And, when asked to rank the academic preparation future workers should have, 68 percent of the manufacturing executives cited the need for a technical certificate (earned at a community or technical college), followed by high school diploma or GED (52 percent) and specialized industry certification (41 percent). Ranked significantly lower were associate's and bachelor's degrees.

Manufacturers' Role

The manufacturing sector is not entirely blameless. Faced with their own financial challenges and the need for some to focus exclusively on business survival, many companies have not been proactive to help combat the skilled labor shortage issue.

"Manufacturers aren't terribly active in Chambers of Commerce or professional associations or with universities and colleges," said FMA economist Kuehl. "They need to be more active in their communities to tell the positive manufacturing story and stress the opportunities that exist."

Some industry executives also have acknowledged that extremely beneficial tactics that fostered skills — in-house apprenticeships, training programs, and internships — have diminished during the economic downturn.

What Must Be Done

Industry trade groups, manufacturers, educators, and the media each can help meet the challenge. Fortunately, significant inroads have been made to:

Increase Young People's Interest in Manufacturing

It's quite apparent that attracting the next generation of workers to manufacturing can be a panacea. That's the goal of the Gold Collar Careers initiative in Wisconsin, established by a consortium of companies, trade groups, and educators. And, that's why FMA member D&S Manufacturing participated in a new promotional video titled, "Manufacturing — the New Cool," which features young people visiting local manufacturers marveling at today's high-tech factories and encouraging students to consider manufacturing careers.

Taking a similar message to young audiences is one goal of the aforementioned Nuts, Bolts & Thingamajigs (NBT) organization. NBT provides grants for summer manufacturing camps that expose junior high and high school students to math, science, and engineering principles, not to mention the many facets of manufacturing technology.

Participants use technology to create a product from start to finish, providing them practical manufacturing experience in 3D design, CNC programming, welding, machining, and fabricating.

NBT also issues scholarships to students at colleges and trade schools pursuing careers in manufacturing.

Two additional examples of this kind of outreach include the girls welding skills summer camp conducted by the Weld-Ed National Center for Welding Education and Training, and The Manufacturing Institute's "Dream It. Do It." initiative, which provides young people access to training and educational opportunities via partnerships with manufacturers, government entities and educational institutions.

Partner with Educators in Effort

Support from the educational community in this effort is critical. Such engagement can be done through both formal and informal activities.

One excellent example of the former is California's "I Built It-Youth" campaign, a collaboration between the California Department of Industrial Relations and the California Department of Education. It promotes careers in the construction trades to junior and senior high students through apprenticeship opportunities.

The Manufacturing Institute recently launched the National Association of Manufacturing endorsed Skills Certification System that targets deficits in education and training. These credentials validate the skills and competencies needed in entry-level manufacturing jobs.

Then there is the case in which an entire high school is established to prepare students for manufacturing careers. One primary mission of the Chicago Manufacturing Renaissance Council (CMRC) is to improve the public's perception of manufacturing, and support education, training, and access to manufacturing careers.

That's why in 2007 CMRC established Austin Polytechnical Academy, which educates students in all aspects of manufacturing, from skilled production and engineering to management and company ownership. The Chicago school features the same computerized, high-tech equipment used by modern manufacturers. In 2010, 23 Austin students earned machining certifications from the National Institute for Metalworking Skills (NIMS).

Less formal activities with the local education community can work as well. Manufacturers can offer factory tours to school classes to show students a clean, modern facility full of sophisticated machinery. Companies should donate equipment to trade or vocational schools to support manufacturing courses. Manufacturers also can advise school instructors and counselors on job opportunities and skill requirements, and participate in curriculum planning.

Revive Apprenticeships and In-House Training

Companies should pledge to conduct programs such as internships and apprenticeships that reach out to individuals considering manufacturing careers.

Advanced Technology Services in Peoria, Ill., proactively recruits workers attending high school or a technical school. The initiative employs students as interns and then, after graduation, hires them on full-time at which time they go through an intensive training program.

Climax Portable Machine Tools in Newberg, Ore., conducts a multi-faceted internship program as well. It recruits students between the ages of 17 and 20 to participate in a learning experience not found in the classroom. The Climax program even involves first aid training and a community service project.

BEGNEAUD Manufacturing, in Lafayette, La., conducts an in-house apprenticeship program that introduces employees to every metalworking process at the company on a rotating basis. BEGNEAUD partners an experienced operator with the younger employee for each specific practice.

Foster a Positive Image

Showcasing the campaigns and programs described here, and the career opportunities and wage potential, can help change young people's minds about manufacturing — if they hear about them.

That's why the industry must constantly inform the editorial media — including the growing social media universe — about these initiatives and available career paths. The media outlets can help tell the story to the younger population, as well as influential figures, such as educators and parents.

In fact, that's one of the missions of NBT. It allocates resources to drive public awareness campaigns to spread the message that manufacturing is a viable career option. NBT is not alone. Entities such as The Manufacturing Institute, SME, and others are quite proactive in this area. Educational institutions also are promoting their special initiatives.

The Alabama Construction Recruitment Institute took the effort to an even higher level. In late 2010, it retained Mike Rowe, a prominent personality on the Discovery Channel and a long-time voice for the need of skilled workers, to help convey the message. In a new public service announcement, Rowe speaks directly to Alabama teens and their parents about the growing need for skilled tradesmen such as electricians, pipefitters, boilermakers, and steel workers.

In Conclusion

The message is clear. The goals are attainable. The economic climate is warming in a positive way.

Many in the industry are encouraged by the progress being made. For example, in the NBT poll cited earlier, parents were asked if they would support having a young factory worker in their family. More than half — 56 percent — actually would recommend their child pursue a career in manufacturing or another kind of industrial trade.

Knowing so many parents will back their children in this career path is welcome news. However, a significant amount of work remains to be done — as, conversely, 44 percent of parents currently are not supportive. The industry needs to convince them, their children and others in this great country that manufacturing is an honorable and fulfilling career.

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About the author: Gerald Shankel is president and chief executive officer of Rockford, Ill.-based Fabricators & Manufacturers Association, International (FMA), a professional organization with more than 2,100 members working together to improve the metal forming and fabricating industry. Founded in 1970, FMA brings metal fabricators and fabricating equipment manufacturers together through technology councils, educational programs, networking events, industry trade publications including The FABRICATOR®, and the FABTECH® trade show. FMA also has a technology affiliate, the Tube & Pipe Association, International (TPA), which focuses on the unique needs of companies engaged in tube and pipe producing and fabricating.

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