

MANUFACTURING SUCCESS

By Susan Reese

THE SUCCESS OF THE MANUFACTURING INDUSTRY IS VITAL TO OUR NATION'S ECONOMY, AND CAREER AND TECHNICAL EDUCATION IS VITAL TO ENSURING THAT SUCCESS.

Manufacturing is the engine that drives American prosperity," according to the National Association of Manufacturers (NAM).

When NAM and its research and education arm, The Manufacturing Institute, released the handbook, *The Facts About Modern Manufacturing*, in October 2006, NAM President John Engler noted, "Manufacturing output in America is at the highest level in U.S. history and continues to support our economy."

Engler also noted, however, that the industry faces unprecedented challenges, including "a serious shortage of skilled production workers, scientists and engineers that will intensify as the baby boom generation retires."

If there is any doubt about the need the manufacturing industry has for skilled workers, an ad that appeared in the January 16 issue of Pennsylvania's *Butler Eagle* newspaper provides compelling evidence of the situation. A network of more than 100 manufacturers in southwestern Pennsylvania ran the ad offering job placement with their partner companies to individuals who complete the six-month, tuition-free manufacturing train-

ing program at Penn United Technology's L.I.G.H.T. Training Center, which still had 10 spots available in the winter classes.

Dreams of Success

NAM is taking actions to address the need for skilled workers in the industry and has even launched the "Dream it. Do it." campaign and Web site, hoping to interest young people in careers in manufacturing.

Stacey Wagner, managing director of NAM's Center for Workforce Success, says, "Nothing could be more important than helping our young people understand the opportunities for careers as they think about who they are and what they want to be."

"Dream It. Do It." she says is, "an aspirational campaign to help young people think about their hopes, and their dreams and their passions, and then to understand that can come not just from being a rock star or a movie star or a basketball star. In fact, there are many opportunities to get into jobs in manufacturing where they will have the chance to be innovative and

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creative and entrepreneurial and do the kind of things they really like to do.”

According to Jerry Jasinowski, president of The Manufacturing Institute, manufacturing offers “a broad range of high-paying, interesting jobs with average annual compensation of nearly \$65,000 for young people with the right skills and education.”

Wagner notes that part of finding those interesting, creative and high-paying jobs means students have to go on after high school and get some postsecondary education. “Certainly two-year colleges and technical colleges are a great stepping stone into a technical career,” she says. “We are very supportive of two-year colleges to help them understand what the workplace competencies are for the 21st century workforce, and we are supporting the development of industry-led certificates and two-year degrees, so that people can graduate from high school and get a two-year degree or a certificate and then get into a good job in manufacturing. Then, at some point, we hope they will want to move up the career ladder, at which point they will have the opportunity to build upon those two-year degrees by going on to other institutions of higher learning.”

Wagner believes that providing students with better information about career opportunities, such as those in manufacturing, will help them make better decisions, and might help change the fact that more than half of those who go straight into a four-year college after high school end up dropping out.

Noting that the latest report from the National Center for Education and the Economy discusses providing all students with opportunities for technical education as well as academic education, Wagner says, “We certainly think this is a very good idea. It helps people get both the technical education that they need to go on to technical jobs as well as an academic background. One of the things that I think is a long-held myth is that if you go into a technical career, you don’t necessarily need to be as academically savvy as young people going on to a four-year college. Of course, this is simply not the case. So we are very supportive of helping young people think about their future and then providing them with a lot of options about how they would get there.”

Starting in High School

At Preble High School in Green Bay, Wisconsin, students can participate in a spe-

cialized program dedicated to preparing students for careers in manufacturing and engineering. One of the technology and engineering labs at Preble High School has 24 computers with 19-inch monitors running software that includes AutoCAD 2006 and Inventor II.

One of the instructors in the technology and engineering department is Jeremie Meyer, and JulieAnna Little (with Autodesk) describes Meyer as an educator “who passionately believes in preparing his students for their future education and career paths through applied science education, and introducing students to higher education and real-world experts.”

According to Meyer, Preble’s capstone course in manufacturing and engineering is an applied engineering course in which the students participate in exciting hands-on activities, such as designing and building super-mileage and electrathon vehicles. The students design the vehicle in 3-D and work in teams to construct the vehicle and then compete with it.

Meyer says the program has some excellent sponsors who help to ensure that what the students are learning in high school has a direct relationship to what they will need to know in the workplace—and that is paying off for both the students and local businesses.

For example, he notes that, “One of our former students is now a laser programmer for Newtech Metal Works.”

Another local company, EMT International, which has grown from a small tool and die company to a leader in designing and manufacturing high-quality equipment, has been very supportive of the program.

“Paul Rauscher with EMT International is a big proponent of education,” says Meyer. “He believes we need technically trained people.”

Because of that belief, Rauscher makes the CNC equipment at his company available for Meyer’s students to produce their designs. “The kids can design the parts,” explains Meyer, “but he won’t make the part unless the student goes in and works with his employees to make the part.”

The EMT employees may offer advice to students about changes that will make their parts stronger or easier to manufacture. Meyer describes it as an eye-opening experience for the students and says that the employees get a kick out of helping the next generation.

DREAM IT. DO IT.

“The idea behind Dream It. Do It. is simple: Whatever it is young people are passionate about, be it cars or computers or music or even art, they can find a great career doing it in manufacturing,” notes the Web site.

The nationwide effort behind the site is supported by the National Association of Manufacturers, manufacturing companies and groups around the country in order to attract more of the nation’s best and brightest young people to go into careers in the manufacturing industry.

The organizations behind this effort are also seeking the assistance of teachers and career counselors and the site makes this offer to educators: “Become a part of this campaign and we’ll provide you with many valuable resources you can use to educate your students about jobs in manufacturing.”

For more information, visit www.dreamit-doit.com.

"They get to meet the kids," Meyer says of the EMT employees, "and they get to see how smart these students are."

Thanks to Meyer's efforts as well as those of his colleague Ryan Freude, "the best architecture instructor in his state," according to Meyer, the school will also be able to purchase a whole lab of Mastercam 10, which Meyer says "works so well with Inventor."

"We will put the whole package in the CAD lab, and kids can see the use of both programs," notes Meyer. He adds, "That is what they will use in the real world."

They are also incorporating some of the Project Lead the Way curriculum into the program to add more rigor. The program continues to evolve and improve in other ways as well. A dual enrollment agreement between Preble High School and the University of Wisconsin Green Bay for the 2007–2008 school year will allow the high school students to earn both one high school credit and three college credits in engineering graphics. In addition, a course in leadership studies in engineering is being implemented with St. Norbert's College, and a welding course will be aligned to the technical college curriculum.

Some things will be retained, however. For example, composites and plastics will still be included in the training because, according to Meyer, there is an excellent manufacturing base that still uses composites. So, while Meyer, his fellow instructors and the administration at Preble High School look for ways to make their program

more academically rigorous and more aligned with postsecondary education, they also will remain aware of current industry needs.

Meeting the Needs of Manufacturing

In Pennsylvania, the Erie County Technical School (ECTS) offers five career clusters in its high school program—communications, construction, human services and transportation, and manufacturing technical training. ECTS is the career and technical education department for 11 school districts in Erie County, Pennsylvania, and, within those clusters, offers 19 career training programs to high school sophomores, juniors and seniors.

Manufacturing students at ECTS can study electrical engineering, electronics, metal fabrication, plastics technology, and tool and die. Equipment used by the students includes a Sumitomo injection molding machine, two 75-ton Van Dorn presses, two robotic pickers and a Novatec dryer.

Robert Suprynowicz, who teaches tool and die and plastics, is new at the school this year. He came from industry and is still settling in to teaching but says he is looking forward to the future as a teacher.

One thing Suprynowicz knows well is the need in his community for what he is teaching his students. "There are still around 3,500 plastics-related jobs in Erie," he says. "If one place closes, you hear about it over and over on the news and in newspapers, but you rarely hear about all of the smaller companies that collectively make up a workforce in need of qualified employees."

In one day, Suprynowicz notes that he spoke to three people about what seems to be one of the biggest problems in local manufacturing—the lack of qualified workers.

"Rick Wilczewski from GMR Industries can't find enough qualified molding machine operators," says Suprynowicz. "Leighann Ransom from Windsor Beach Technologies came here seeking future graduates of ECTS to work for them while getting company-paid training from both in-house and at Penn State Behrend. And Elaine Shaffer (the school's student services coordinator) needs more students to fill the demand for plastics, tool and die, and facilities maintenance positions—available now."

Suprynowicz sees the growing trend of an increasing shortage of qualified employees as significantly reducing the growth potential for the local marketplace, but believes that trend can be reversed.

Why Manufacturing is Essential

The National Association of Manufacturers and The Manufacturing Institute cite the following facts about manufacturing that make it essential to our nation's economy and security.

- It grows the economy. Every \$1.00 in manufactured goods generates an additional \$1.37 worth of additional economic activity—more than any other economic sector.
- It invents the future. Manufacturers are responsible for more than 70 percent of all private-sector research and development, which ultimately benefits other manufacturing and non-manufacturing activities.
- It competes internationally. The United States is the world's largest exporter; 61 percent of all U.S. exports are manufactured goods, double the level of 10 years ago.
- It generates productivity increases. Over the past two decades, manufacturing productivity gains have been more than double (actual figure 2.5 times) that of other economic sectors. These gains enable Americans to do more with less, increase our ability to compete and facilitate higher wages for all employees.
- It provides more rewarding employment. Manufacturing compensation averages more than \$66,000, the highest in the private sector, and manufacturers are leaders in employee training.
- It pays the taxes. Manufacturing has been an important contributor to economic growth and tax receipts at all levels of government, contributing one-third of all corporate taxes collected by state and local governments.

For more information, visit www.nam.org.

“While high-volume commodity parts will continue to be made in third-world countries more than here, we still have advantages in turnaround time, shipping costs and fast problem-solving,” he says.

Suprynowicz cites a December *Market Monitors* report that shows plastics and rubber products are fourth on the list of the top nine performing industries. “These are decent living wage jobs,” he adds.

As he enters his second semester of teaching and looks toward the future, Suprynowicz says, “My goal is to train students with the skills necessary to obtain employment in an entry-level position directly after high school, while also giving students a head start for postsecondary education.”

According to ECTS Director Aldo Jackson, the Manufacturers Association of Northwest Pennsylvania, which represents 17 counties in the state, “has been very helpful,” and even provides a scholarship program for students enrolled in the manufacturing program.

Although most of the program’s graduates go directly into the workforce, a number have gone on to postsecondary education, studying engineering technology or mechanical engineering.

Jackson notes that not only has his school’s program historically been strong, but it is one of the few secondary programs dedicated just to plastics technology and based on injection molding of plastics.

“Plastics is one of the three or four largest industries in northwest Pennsylvania,” says Jackson, “and recently Pennsylvania received a grant from the U.S. Department of Labor to build work-

force development in the state in the plastics industry.”

He also notes that ECTS is planning to make an investment in new CNC equipment this spring, a purchase that will be aided by a matching grant of \$150,000 from the state, “So we will continue to update the program.”

That should be welcome news not only for the communities of northwest Pennsylvania, but for an industry with such a need for skilled, well-trained employees. **I**

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For Further Exploration

To learn more about some of the equipment and software used in career and technical education manufacturing programs, here are the Web sites to explore.

Autodesk
www.autodesk.com

LabVolt
www.labvolt.com

Mastercam
www.mastercam.com

SolidWorks
www.solidworks.com

Tech Ed Concepts
www.TECedu.com