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Grounded Mobile Training Center
Needs to Get Back on the Road

By LARRY MAIER

Western Mass. and the nation are now facing a critical shortage of skilled labor. Concerned groups include the Department of Defense, the Aerospace Industries Assoc., the National Defense Industrial Assoc., and the National Tooling and Machining Assoc., and they are treating this as one of the most critical threats to our national security, our economy, and our way of life.

This problem covers the entire pipeline, from highly skilled machinists who can operate the high-tech equipment utilized in today's manufacturing facilities, to degreed engineers. If we do not find and commit to a solution, we will no longer be able to compete on the world stage, both economically and militarily.

According to a survey of local precision manufacturers conducted by the Western Mass. chapter of the National Tooling and Machining Association (WMNTMA), there are more than 400 openings in the 413 area code at the moment. An aging workforce will add 200 to 300 more per year, even if the economy is flat. Nationally, there are tens of thousands of high-paying jobs, and companies in Western Mass. are turning away work due to an inability to find qualified employees.

There are a number of factors contributing to these sobering statistics, among them being the ongoing challenge of convincing young people and their parents that manufacturing, specifically precision manufacturing, is alive, well, and has a bright future. Another challenge is to simply inspire young people to want to join this sector, and this can best be done by showing and telling them what it's all about.

Unfortunately, one of the more effective vehicles — literally and figuratively — for handling these assignments, a mobile training unit operated by Mass. Manufacturing Extension

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Partnership (MassMEP), has been grounded due to funding cutbacks.

This unit must be put back on the road, and recent experiences in Western Mass. involving this important teaching tool will explain why.

A Front-row Seat

When members of the WMNTMA visit middle schools and high schools, the comment heard all too often from the workers of the future is, "I thought manufacturing was dead."

If those in this industry do not change this perception, it will be.

We continually hear about layoffs and shutdowns. This is the information on which today's parents and children base their career decisions. The focus is on unemployment, not openings. According to reports issued by the Mass. Department of Labor, there was approximately one unfilled job for every two unemployed people in the state as of last December, and roughly 7% of the unfilled jobs were in manufacturing.

Meanwhile, 100% of graduates from manufacturing technology programs at local vocational high schools have jobs, go into the military, or go to college upon graduation. Neither our elected officials nor our educators preach this message, and that's why those in high-tech, precision manufacturing need to educate teachers, parents, and kids — to balance the message.

Gov. Deval Patrick and top educators in Massachusetts have identified the need to improve interest and performance in grades K-12 relative to STEM (science, technology, engineering, and math) education. I personally sit on the NDIA's STEM workforce committee, which is addressing the problem on a national level along with the AIA. Keeping in mind this broad-based focus and awareness, I asked my son, Ethan, a high school junior with an interest in engineering, whether his teachers were relating the STEM subjects to real-world applications and careers. Disappointingly, his answer was "no."

If we want students to be excited, to learn, and to retain, then we must relate the raw information covering formulas and technologies to exciting real-world applications. This in turn will provide a vision as to how education prepares them for careers and their future.

Today's high technology manufacturing world is the broadest, purest application of STEM. At my company, Westfield-based Peerless Precision Inc., we use metrology, physics, chemistry, computers, robotics, engineering, algebra, trigonometry, and geometry every day. The future of manufacturing is not about cheap labor. It is about using all of the STEM disciplines to improve productivity and develop new technologies. We need to include application into education.

With all this in mind, I called Jack Healy, president of

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Worcester-based MassMEP roughly a year ago, and asked if the WMNTMA and the Regional Employment Board (REB) of Hampden County could borrow its Mobile Training Unit (MTU) in an effort to reach out to local middle-school students.

This vehicle had — that's past tense — 12 computers, a mini-mill, and a mini-lathe. It was in use by MassMEP to train unemployed people in the Northeast to be machine operators. Healy immediately agreed to let us use it for a two-week period, and even provided personnel to operate the vehicle and act as instructors. David Cruise, manager of Regional Networks (part of the REB), worked with middle-school counselors at four Springfield public schools and arranged for the MTU to visit each.

The result was that 320 eighth-graders participated in 45-minute educational seminars, during which they learned how STEM is used in the real world. Cruise described the program as "an integrated STEM-related education activity that links mathematics and science with practical applications of CAD (computer-aided design) and observation of the operation of a mini-milling machine and a lathe. In addition, each student was presented with career information and informed of the educational requirements that are needed in today's high-technology, precision-manufacturing environment. The program was presented in a highly interactive manner that gave students and accompanying faculty valuable information that exposed them to a myriad of career pathways."

This was followed by tours of EASTEC by 140 students from six middle schools with funding obtained from the Society of Manufacturing Engineers (SME). At EASTEC, the students had their first exposure to the full scope of today's high-tech, precision-manufacturing equipment.

This successful program was expanded in the fall of 2007, when the MTU toured 13 area middle schools. This time, almost 1,000 eighth-graders participated in this STEM career-awareness program, which was followed by Middle School Precision Machining Career Awareness Day, which teamed each of the 13 schools with a local precision machine shop. Almost 200 students who had expressed interest in manufacturing after the seminars were given tours of local high-tech manufacturing facilities. They saw the clean, well-lit, technology-driven companies that are based in this area.

And here are some of the comments from school personnel after tours of the mobile lab and local manufacturing facilities:

- "The lab gave students a view of a concept that was totally alien to their world. Some students were very fascinated and truly interested in pursuing this venture";
- "I think it was helpful for them (the students) to see the inside of an actual workplace";
- "Each student came back with favorable comments";
- Faculty members have repeatedly said how important they think opportunities like this are for our students. I

will be delighted to support future collaborative projects"; and

- "We had a great day with the mobile lab. Students liked it, and teachers appreciated the opportunity. Matt [Healy] was great with the kids."

Buck Upson, president of Pioneer Tool Supply Co. in West Springfield, observed one of the seminars at Van Sickle Middle School in Springfield, and came away impressed with what he saw.

"I was standing in a position where I could observe two students. Two young boys, silent, with boredom and apathy painted across their faces, entered the bus and slouched down nonchalantly," he recalled. "Within minutes they were sitting up straight and leaning forward to actively listen to the teacher. Very soon thereafter, they were asked to program a basic part on the computer workstation. Both of them finished the task before the teacher completed the step-by-step instructions. They had grasped the concept without aid. At the end of the session, they left the bus energized and openly enthusiastic, talking about what they had learned and wanting to learn more."

Meanwhile, Clem Fucci, chair of the Manufacturing Technology Department at Westfield Vocational Technical High School, had a similar reaction.

"Several parents approached me to tell me that their sons or daughters had toured the bus," he said. "I cannot stress enough what impact that bus has had with helping to recruit young people into pursuing a precision manufacturing and engineering career here in its first year. I hope the bus will have a long-term relationship with us to help fill the pipeline for precision machining and engineering."

Fueling the Imagination

In the eyes of all of the business people and educators who were involved, this program has been the single most successful outreach program to middle-school students that they can remember. It motivated and excited students, faculty, and parents. It brought STEM to life. It showed that STEM education is relevant to their future.

Unfortunately, MassMEP no longer has the Mobile Training Unit because it has lost state funding for its traditional program operations. However, based on the success of this outreach program, WMNTMA members are proposing a new, expanded vision and mission for the mobile training unit.

They believe this program would be a perfect model for outreach to grades 6-8 throughout the state and throughout the school year. It would bring STEM alive by showing our young people how these skills are used every day in precision manufacturing. And to make things 'real,' demonstrations would be followed by tours of high-tech manufacturing facilities near the schools.

Industry leaders know the program works based on the

sample of 1,300 students who have participated thus far. We need to build on this successful, tested model. And we need to find funds, whether in the private or public sector, to make this happen.

Every day we hear about failures in our education system. This program has been a success. And we need to find a way to resurrect and expand it.v

Larry A. Maier is president of Peerless Precision Inc. in Westfield; hmaier@peerlessprecision.com