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From the Desk of Jack Healy

## Mobile Outreach to Schools Grabs Kids' Attention

By Larry A. Maier-President, Peerless Precision, Inc.

Western Massachusetts and the nation are now facing a critical shortage of skilled labor. Concerned groups include the Department of Defense (DOD), the Aerospace Industries Association (AIA), the National Defense Industries Association (NDIA), and the National Tooling and Machining Association (NTMA). 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 technology equipment utilized in today's manufacturing facilities through 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 Massachusetts chapter of the National Tooling and Machining Association (WMNTMA), there are over 400 openings in phone area code 413 right now. An aging workforce will add 200 to 300 per year, even if the economy is flat. Nationally, there are tens of thousands of high paying jobs. Currently, companies in Western Massachusetts are turning away work due to an inability to find qualified employees. This article will explore one of the causes and end with a recommended solution.

### Creating Awareness Among Students

When I and my colleagues in the WMNTMA visit middle schools and high schools, the all too often comment from the "worker of the future" is, "I thought manufacturing was dead." If we 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 Massachusetts Department of Labor, there was approximately one unfilled job for every two unemployed people in the state as of December, 2007. Roughly 7% of the unfilled jobs were in manufacturing. 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 politicians nor our educators preach this message. We in high technology, precision manufacturing need to educate the educators, the parents, and the kids to balance the message.

### Manufacturing is STEM

Governor Patrick and the 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 at 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 word 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, 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.

#### **MassMEP's Mobile Training Unit and the Schools**

In April, 2007, I called Jack Healy, President of MassMEP, and asked if we, the WMNTMA and the Regional Employment Board of Hampden County (REBHC), could borrow their Mobile Training Unit (MTU) in an effort to reach out to local middle school 8th graders. This vehicle had 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. Jack immediately agreed to let us use it for a two week period, even providing personnel to operate the vehicle and act as instructors. David Cruise, Manager of Regional Networks (part of the REBHC) 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 where they learned how STEM is used in the real world.** David Cruise described the program as "an integrated STEM related education activity that linked 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 6 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 technology, 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 8th graders participated in this stem career awareness program.** This was followed by "Middle School Precision Machining Career Awareness Day" which teamed each of the 13 schools with 13 local precision, machine shops. Almost 200 students who had expressed interest in manufacturing, after the seminars, were given tours of local high technology manufacturing facilities. They saw the clean, well-lit, technology driven companies that are based in this area.

#### **What School Faculty Said**

David Cruise received the following 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 one (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."
- "...we had a great day with the mobile lab. Students liked it and teachers appreciated the opportunity. Matt (Healy) was great with the kids."

### **An Industry Leader's Observation**

Buck Upson of Pioneer Tool Supply Co. in West Springfield observed one of the seminars at Van Sickle Middle School in Springfield and commented, "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. Within minutes they were sitting up straight and leaning forward to actively listen to Matt (the teacher). Very soon after, 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."

### **At the High School Level**

Clem Fucci, Chair of the Manufacturing Technology Department at Westfield Voc-Tech said, "Several parents approached me to tell me that their sons or daughters had toured the bus. I cannot stress enough what impact that bus has had with helping to recruit young people into pursuing a precision manufacturing and engineering career at Westfield Vocational High School 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."

### **The Vision**

In the eyes of all of the business people and educators with whom I have spoken, 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 as it lost state funding for its traditional program operations. However, based on the success of this outreach program, my colleagues in the WMNTMA are proposing a new, expanded vision and mission for the Mobile Training Unit.

We 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 youth how these skills are used every day precision manufacturing. And to make things "real," demos would be followed by tours of high technology manufacturing facilities near the schools.

We know the program works based on the sample of 1300 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.

If you as a reader can help make this vision happen, feel free to send an email to me at [Imaier@peerlessprecision.com](mailto:Imaier@peerlessprecision.com) or to David Cruise at [dcruise@rebhc.org](mailto:dcruise@rebhc.org).

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100 Grove Street, Worcester, MA 01605, USA, [Privacy Policy](#)  
Tel: 508.831.7020, Fax: 508.831.7215, Email: [info@massmac.org](mailto:info@massmac.org)  
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