Where Manufacturing and Education Mesh

BUT ASSOCIATIONS AND GRASSROOTS ORGANIZATIONS LACK PUBLIC AWARENESS

Jack McGuinn, Senior Editor

Pick up a newspaper or magazine, tune in the nightly news, or just talk to a neighbor, and what you often hear is that, when it comes to manufacturing, we can't—or won't—make it here anymore. Already for too many Americans, that is an unquestioned reality. The good news is that an array of manufacturing associations, partnered with grassroots outreach programs and other like-minded councils and organizations nationwide, are refusing to accept that reality. Fact is, many of these groups have been fighting the good fight for more than 20 years. The problem—one that continues to exist—is that much of their efforts go unnoticed by the general public.

Following are just two examples of ongoing, collective efforts that should instill hope in Americans and manufacturers alike that much is being done to recruit, educate and train our young people to compete and excel in today's—and tomorrow's—global economy, and in a life in manufacturing as skilled workers, managers, even owners. Their work is dedicated in part to returning the United States to its once-held position of worldwide dominance in the art of not just selling and marketing things, but in making them as well.

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—John Winzeler, Winzeler Gear

Here is a snapshot of two organizations doing yeoman's work with their efforts to recruit, educate and train tomorrow's manufacturing workforce—the Chicago Manufacturing Renaissance Council (CMRC) and Project Lead the Way (PLTW).

Leading the race to the top. The CMRC, founded in 2005, is a consortium of Chicago-based groups including the Illinois Manufacturing Association, the Tooling Manufacturing Association (local chapter), Winzeler Gear, the Chicago Federation of Labor, the Mayor's Office of Workforce Development, the Chicago Public Schools and Chicago City Colleges. Their mission: piloting the Chicago region's need to attract global high-performance, high-value added manufacturing.

In support of that mission, they work to: educate the public regarding the image and societal appreciation of modern, high-tech manufacturing; reform the public education and workforce development systems; enhance government programs for manufacturers and their workers; develop and coordinate policies in support of these initiatives, both statewide and nationally; and seek to attract "A-list" companies to the Chicago area. The CMRC is in fact an initiative of its larger counterpart—the Center for Labor and Community Research (CLCR), founded in 1982 to respond to the great decline of U.S. manufacturing that began with that decade. But it's all part of what the CMRC envisions as "leading the race to the top."

Which brings us to what the CMRC hopes will someday serve as a crown jewel among its many activities, and as an incubator for a rust-belted community's commercial redevelopment as well as for future undertakings. The Austin Polytechnical Academy, located in the economically depressed Chicago neighborhood of Austin, is scheduled

CMRC executive director Daniel Swinney (left) and Winzeler Gear's John Winzeler.

to open its doors in 2007. The school will be a part of the Chicago Public Schools system's Renaissance 2010 initiative, instituted to replace under-performing schools throughout Chicago.

Some might reasonably wonder why, given the many hurdles manufacturing already faces domestically regarding the global economy, would the CMRC set up shop in an area like Austin. A central reason is that the Austin community in may ways can be looked at as a microcosm of the sorry state of manufacturing in America. Austin used to be home to manufacturers of all shapes and sizes, accounting for 20,000 industrial jobs. In a scenario all too familiar across the country that began in the early 1980s, most of those companies closed or relocated, taking their well-paying manufacturing jobs with them. Neighboring Chicago—"the city that works"—lost 3,000 factories in that decade alone.

Around that same time, in nearby Cicero, IL, more than 50% of the working population found themselves out of work. One of them was Daniel Swinney, a machinist for 13 years, but out of work all the same. Determined to do more than stew about it, Swinney involved himself in a number of community-based, pro-worker and pro-manufacturing endeavors, leading first to the creation of the Center for Labor & Community Research, and in 2005 to forming CMRC, where he serves as executive director and is making, as one former city planner once put it, "no small plans."

As usual, education is key. "It's the whole thing of leading the race to the top," Swinney says. "We do see (the academy) as a way to transform society." He adds that with the Austin community's high school drop out rate of 50%, "Kids turn to crime not because they are criminally minded, but because they really do have limited options, and we need to address that directly. So we see the school as part of a solution that ripples through the community in a way that's profound and different."

Transforming society is a tall order, but make no mistake—Swinney does not see himself tilting at windmills. Rather, he believes that CMRC's goals for Austin are both realistic and attainable, but a buy-in on the part of the education community will be crucial. Swinney cites a 2001 CLCR study commissioned to evaluate what remained of the Chicago area's manufacturing base, that identified a deficient education system as a major problem relative to manufacturing's depleted workforce. The report, funded by the U.S. Department of Labor, was an alarm bell for the CLCR that led to the formation of the CMRC in 2005 and, ultimately, Austin Polytechnical.

"The study was conducted with the Chicago Federation of Labor, and it said that there was a huge problem in education, that it was a non-system which serves neither companies nor the broad population because of its poor functioning. And we proposed a series of reforms, including the need for small schools and academies for manufacturing."

Those reforms can come none too soon for Winzeler Gear's John Winzeler, whose concerns for the future as an owner of a gear company are widely shared by others in the

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Bart Aslin, SME Education Foundation director, collaborates with Project Lead The Way to introduce junior high students to engineering and manufacturing.

industry.

"We're not just doing this because of the schools," he says. "It's something that has been sorely lacking. None of my peers or my own company have the caliber of workforce we need today. We just don't have the talent in manufacturing that we need to compete globally. We (CMRC) are trying to create an environment that supports complex high-end, high-value added manufacturing."

Both men believe schools like Austin Polytechnical can serve as incubators where students from all backgrounds can receive an education and the hands-on experience that will help them develop career goals beyond simply learning a trade.

"The career paths we're encouraging are more than just the traditional vocational school," says Swinney. "We're encouraging kids to understand the skills needed to go into management, as well as into ownership. Because in small companies there's a huge problem of succession ownership, where an owner doesn't have an heir to go into the company and everybody loses. Kids who go to Austin Polytechnical will have an exposure, in terms of their career, to be thinking of not only the most highly skilled technical positions, but also in management and ownership. Which means it is real community development, where they can play an active role in the next generation of manufacturing in Chicago."

And one of the resources the CMRC relies on to help make that happen is the national pre-engineering curriculum developed by our other spotlighted organization for change—Project Lead The Way. The courses have earned high praise from organizations like the Tooling Manufacturing Association and other sectors, and are intended to provide high school students with an early understanding and appreciation of high-tech manufacturing and the opportunities it affords them.

"It's a universal curriculum that is lab-based, a new approach to industrial arts classes that requires students to work in a problem solving lab environment on a variety of subjects," says Winzeler. "The beauty of this program is that students who may not be destined for college can go into this program as well. And because they work side by side with pre-engineering students, it brings them along to a much higher level of learning and understanding."

Put another way, Swinney looks at Austin Polytechnical as not just a springboard to a better life for its underprivileged students, but also as an important contributor to manufacturing's vital role in a global economy. And now, the kids will have something else they've lacked—choices.

"Each kid that graduates will have a high school diploma; they'll be college-ready if that's the course they want to go," says Swinney. "Because we believe modern manufacturing needs to introduce kids at an early age to a career in manufacturing. And we hope that some kids will take a job after high school, some will seek a higher place in their career path by going to a community or four-year college. The whole idea is that we want them to come back to manufacturing at some level after they complete their education that's consistent with their aspirations. Because leading a race to the top requires that we start recruiting the best and the brightest kids from all society to come into manufacturing."

Local outreach goes national. Much like the CLCR, PLTW was started in the 1980s, which marked the beginning of manufacturing's long descent of lost industries, jobs, and the skilled workers to fill them. Today, according to its website, "PLTW is a national program forming partnerships among public schools, higher education institutions and the private sector to increase the quantity and quality of engineers and engineering technologists graduating from our education system." PLTW's pre-engineering curriculum is now taught in 45 states and the District of Columbia.

The program was begun by Richard Blais, at that time chairman of the technology department for an upstate New York school district. Already aware that his students' preparation for advanced math and science was lacking, Blais had initially formed an advisory board culled from industry local leaders in order to solicit their suggestions on how best to improve his district's technical-based course offerings. After early success in attracting students to the upgraded coursework, the advisory board received a substantial gift from one of its own members. Richard Liebich, a local businessman and now PLTW's CEO, made funds available from his family's Charitable Leadership Foundation. That seed money eventually led to the expanded reach PLTW commands today, with a presence in 1,700 schools nationwide.

As an example, Niel Tebbano, PLTW vice president for operations, cites a partnership with several other like-minded groups that is helping South Carolina in its aggressive efforts to recruit and train its labor pool to meet the challenge of high-tech manufacturing's worker needs.

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"There is a need to attract and retain skilled technologists and engineers across the country," he says. "The defense industry is especially at risk with its future workforce needs. The South is not immune to this need, but the challenge there I believe is to grow its own workforce, as attracting from a diminishing pool will be a challenge. South Carolina is a great example of a state proactively seeking to improve its education programming to do just that."

Asked why the public secondary schools have gotten away from schooling students in the industrial arts, Tebbano says compartmentalized thinking—some might call it tunnel vision—results in limited vision and communication.

"Traditional high school courses are taught in silos," he explains. "There is a silo for math, one for science, etc.; there is very little communication between them. And they are taught by well-intentioned instructors who have never had much work experience outside of teaching, and their understanding of manufacturing and engineering is limited as a result. That's why courses taught in context, that are rigorous and relevant where the students can apply the math and science in meaningful problem solving, like PLTW, produce significant results."

The Society of Manufacturing Engineers (SME) partners frequently with PLTW in its endeavors. Bart Aslin, the society's education foundation director, seconds Tebbano's observations.

"There is now a greater need to attract and train skilled workers to the South as well as nationwide," he says. "Since many school districts moved away from career technical training, qualified machinists, welders, gear designers, etc., are harder to find."

To help meet that need, the SME's educational arm is working with PLTW to combine teaching with week-long day camps to recruit young people for tomorrow's world of manufacturing. It's just another example in support of those in the gear industry who stress that the benefits of manufacturing need to be presented to students at an early age.

Partnering to achieve common goals. "In 2006, the SME Education Foundation partnered with PLTW to establish STEPS (Science, Technology and Engineering Preview Summer) academies for 6th and 7th grade students," Aslin says. "The purpose of these one-week camp experiences is to introduce young people into the wonders of math, science, technology and engineering. Each camp will have manufacturing modules as part of the curriculum. Students who attend the camp are encouraged to continue their 'steps' through the pipeline by entering the PLTW Gateway to Technology program at their local school. Mentoring will be provided so that students will continue this pathway into high school and beyond. (The foundation) will provide scholarships to students who enter technology careers."

Despite the very real and justified concern that exists in the nation today over manufacturing's future role in a shrinking world with an ever-growing global economy, there are many "small-world" success stories unfolding across the

country from which we can learn and be encouraged; too many, happily, to spotlight here. Hearts and minds of young people—and educators—are being influenced in a number of ways that is prompting them to give serious consideration to a career in manufacturing.

"We have a number of people we need to sell on this project—students, the community and parents," says John Winzeler. "And there's going to be a broad-based communication project to not only promote (Austin Polytechnical), but to promote the fact that there are meaningful and good-paying jobs in manufacturing, and that (manufacturing) isn't a dinosaur. That's a big paradigm shift."

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