



PEOPLE POWER:  
**Human capital  
drives manufacturing  
competitiveness**



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## CHANGE THE GAME: Plan for Performance<sup>1</sup>

[41%] of manufacturers said “skilled workers” are needed to meet business objectives for the next 12 months.

[64%] said productivity losses are a result of a skills gap.

[56%] report this gap has impacted their company's ability to grow.

[54%] of manufacturers do not have a company-wide plan for addressing their skills gap.

[40%] have no regular training budget.

[42%] report only half or less of key performance indicators are moving in a positive direction.

## THE POWER of People

Imagine two manufacturers. Both have the same cutting-edge equipment, the same processes, and the same materials. One struggles with continuous improvement and new product development, resulting in lost time and money. The other demonstrates dramatically reduced downtime and waste, boosting productivity and profitability. The secret to this company's success? People.

What sets world-class companies apart from their competitors is an understanding of, and commitment to, investing in this most precious resource: their employees, also known as “human capital.”

While there are several components to developing human capital such as talent acquisition, performance management, rewards and recognition, success planning and system process/system design, one critical area is workforce development. The findings are clear: model companies are outperforming others in large part because they manage and train differently.

For instance, the *Accenture 2014 Manufacturing Skills and Training Study*<sup>2</sup> projected an 11 percent loss of annual earnings as a result of a skills shortage for a sample manufacturer. In the example, based on the median respondent in that survey, increased overtime, downtime and cycle time from not having the right people in place resulted in \$4.6 million in lost earnings in one year.

A well-trained workforce is a competitive advantage, allowing companies to drive innovation, customer satisfaction, quality, productivity and growth. The beneficial by-products are engaged and loyal employees, satisfied stakeholders, and a thriving economy.

In this report, Tooling U-SME, an industry leader in manufacturing training and development, explores the importance of investing in people, demonstrates the importance of human capital for meeting business objectives and outlines industry best practices in training and development.

# HELP WANTED: **Skilled Workers**

According to The Boston Consulting Group (BCG),<sup>3</sup> without aggressive action, the next decade is expected to bring a potential shortfall of 875,000 machinists, welders, industrial-machinery mechanics and industrial engineers.

While the exact number of unfilled jobs is often debated, a shortage is already being felt. Baby boomers are retiring, fewer students are pursuing a Science, Technology, Engineering and Math (STEM) education, and more jobs are moving back to the U.S. from foreign soil.

One added pressure on manufacturers is the rapidly changing pace of technology, which means some workers are struggling to keep up. While technical innovation can provide great opportunity for companies, it can be a challenge for workers unable to master the constantly changing skills, leading to unfilled jobs.

This shortage of human capital is impacting manufacturers today. Nine out of ten manufacturers are having difficulty finding skilled workers and they say this is directly hurting the bottom line, according to an SME survey.<sup>1</sup>

In fact, 64 percent of survey respondents say productivity losses are one of the top two performance indicators impacted by a lack of skilled labor. In addition, nearly 60 percent of the survey respondents say the gap in skilled labor impacts their company's ability to grow.

Yet despite this serious impact on business conditions, more than half of manufacturers say they don't have a plan in place to address the skilled labor shortage.<sup>1</sup>

The BCG report includes an agenda for a 21st century manufacturing talent base. In its recommendations, among others, BCG states that manufacturing companies should return to the historical practice of investing in internal training programs in order to build capabilities required to remain competitive.

A structured training program can fill existing gaps and prepare the workforce for the future while meeting business objectives including the two outlined in the same SME survey:

- ▶ Gaining market share (35%)
- ▶ Recruiting and retaining talent (31%)

*“Education, training and health are the most important investments in human capital.”*

**Gary S. Becker**, American economist credited with popularizing the term “human capital.”

## SKILLED WORKERS **Most in Demand**<sup>1</sup>

[ 44% ]

CNC Machinists

[ 31% ]

CNC Programmers

[ 19% ]

Machine Operators

[ 18% ]

Tool Makers

[ 17% ]

Mechanical Technicians

# THREE CRITICAL INITIATIVES for Manufacturers

Many manufacturers are struggling with three critical initiatives, despite their importance to world-class manufacturing status and business success, according to *Tooling U-SME's Manufacturing Insights Report*.<sup>4</sup> These areas are:

- ▀ Continuous improvement – improving quality, cost, speed, value and safety
- ▀ Workforce development – building a workforce with skills and motivation
- ▀ Production planning for new products – moving new-product designs efficiently through production and into the market

With just 39 percent of manufacturers anywhere close to world-class manufacturing status,<sup>1</sup> the potential is great for most organizations to improve via the three strategies – all of which require improved training.

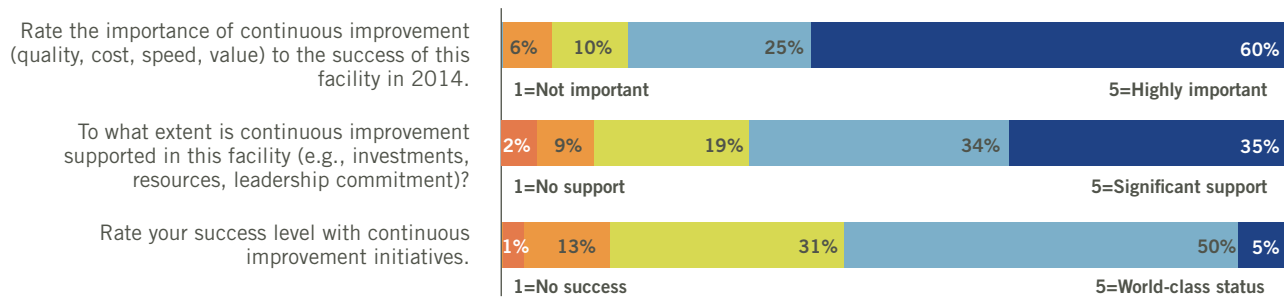
Of concern is a major threat to competitiveness with the existence of serious “execution gaps” between high executive awareness of the importance of the three initiatives and low support (e.g., resources, investments) for their implementation.

For instance, 85 percent of manufacturers rated continuous improvement as important or highly important. Yet many of these executives are not supporting their continuous improvement initiatives with investments, resources, training, leadership commitment, etc. – and thus, are not succeeding with their efforts (Figure 1).

It's increasingly clear that training and professional development are not only vital to manufacturing success related to these three initiatives, but essential tactics in meeting the growing talent challenges.

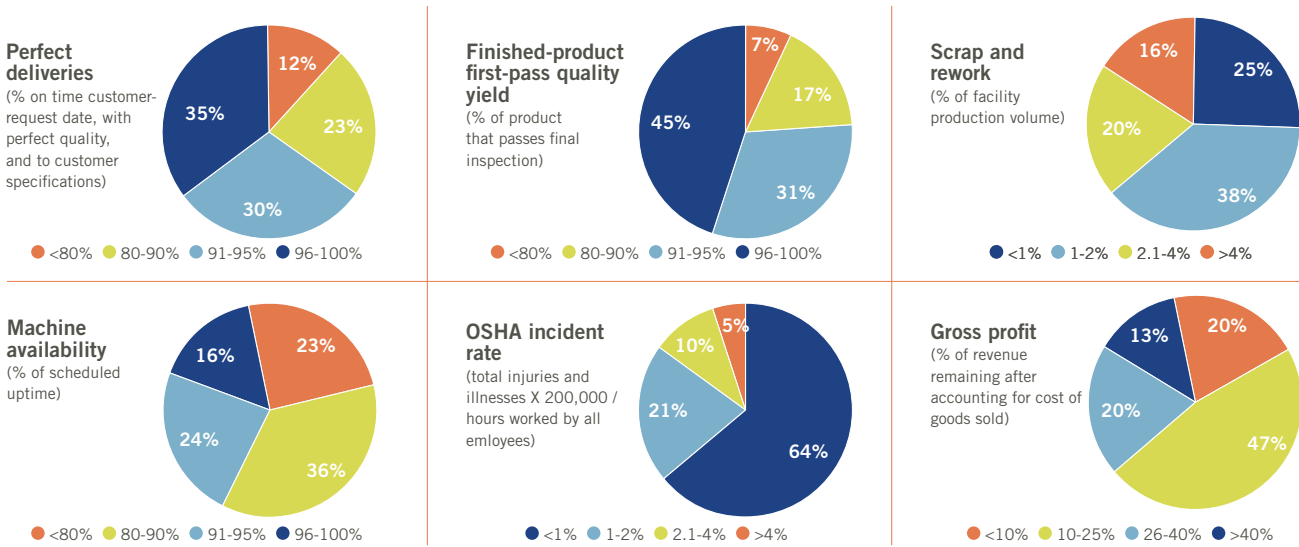
In fact, the Manufacturing Insights Report shows there is a direct connection between a highly trained workforce and organizational improvements that boost the bottom line.

**Figure 1. Continuous improvement importance, support, and success (% of facilities)**



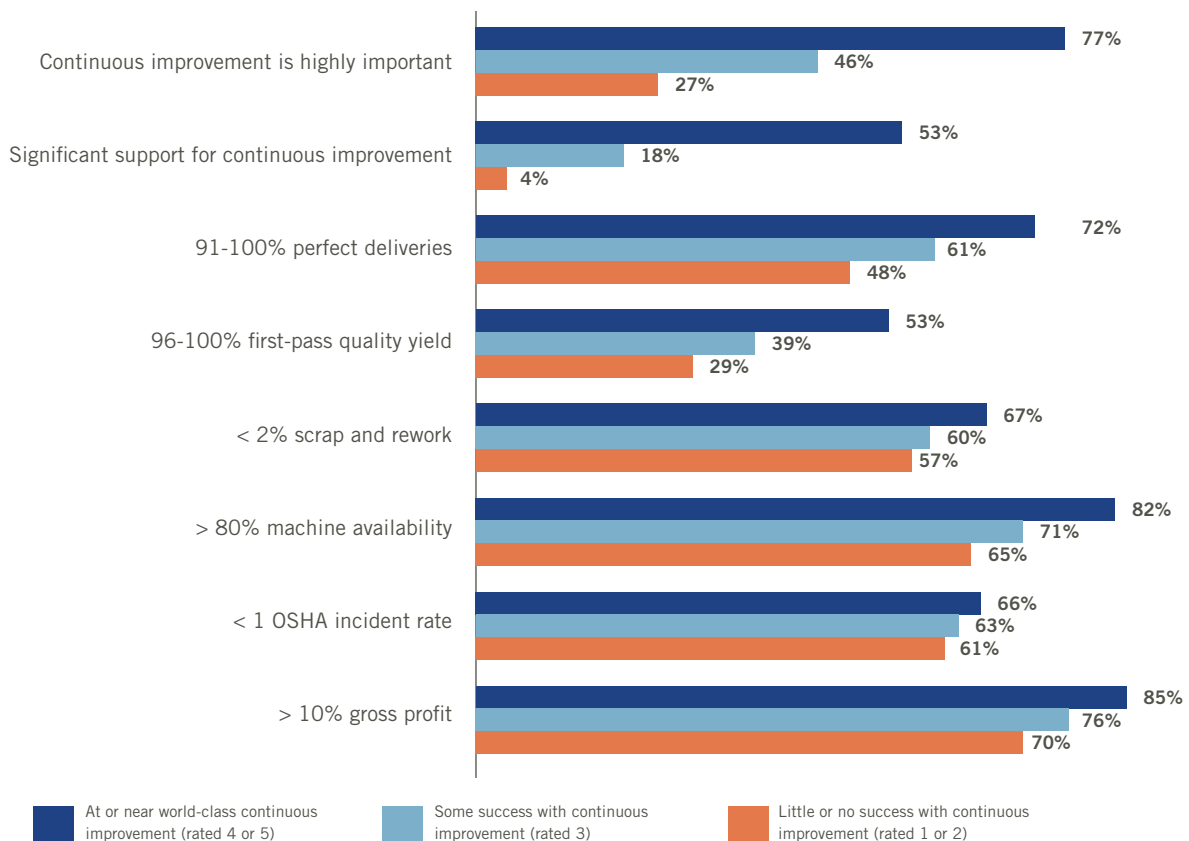
Existing performance metrics show there is room for improvement with many manufacturers struggling to achieve acceptable results (Figure 2).

**Figure 2. Operations metrics (% of facilities)**



Continuous improvement is a cornerstone of world-class manufacturing. Manufacturers that excel at continuous improvement are dramatically more likely to achieve overall world-class manufacturing status for their operation (Figure 3).

**Figure 3. World-class continuous improvement (% of facilities)**



# WORKFORCE

## Training and Development

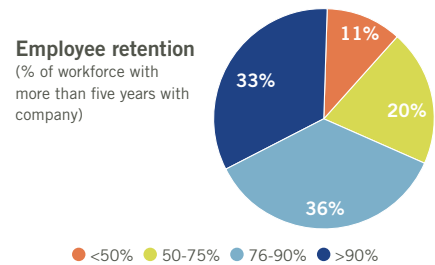
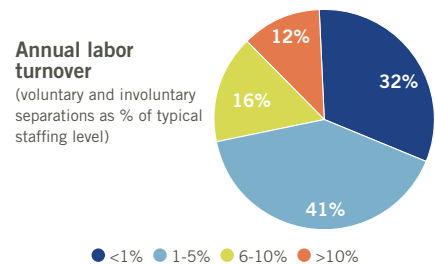
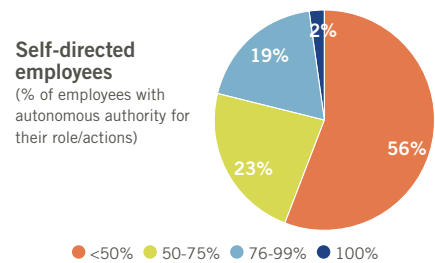
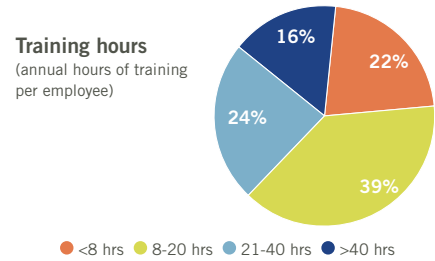
A structured training and development program can help companies become world-class organizations and strengthen business operations. It also creates a culture that attracts the best talent and skills.

Yet many executives report that they lack measures to accurately track success in workforce development. Metrics cited by executives as effective in monitoring progress of workforce training and development initiatives include (Figure 4):

- ▀ ISO audits
- ▀ Labor times
- ▀ Labor turnover
- ▀ Production efficiency improvement
- ▀ Scores on annual employee surveys
- ▀ Self-assessment and scoring proficiency tests
- ▀ Skills matrix by job function
- ▀ Training hours completed

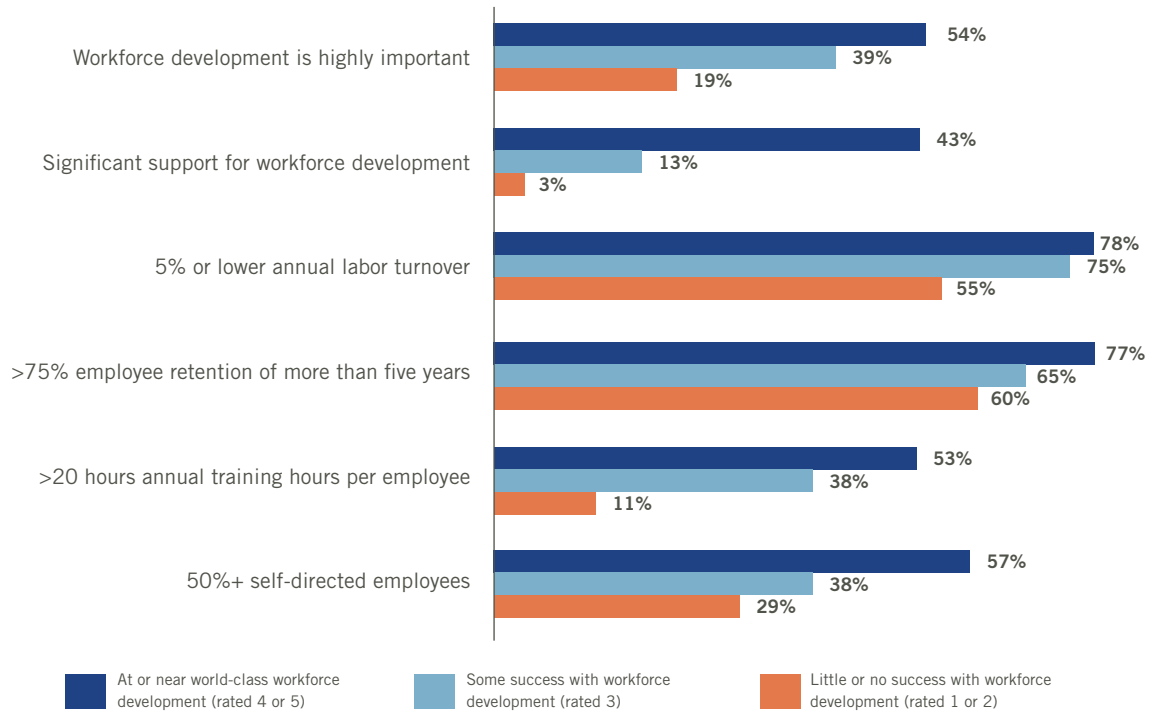


**Figure 4. Workforce training and development metrics (% of facilities)**



Manufacturers at or near world-class workforce training and development recognize its importance, support it with investments and training, and enjoy improved performances (Figure 5).

Figure 5. World-class workforce development (% of facilities)



# NEW PRODUCT **Planning**

Another focus for world-class manufacturers is production planning for new products.

Profitable innovation is increasingly driven by the speed – and seamlessness – of the handoff from design to manufacturing.

Innovation success today requires the coordination and collaboration of design with manufacturing and an ability to plan for the production of new products.

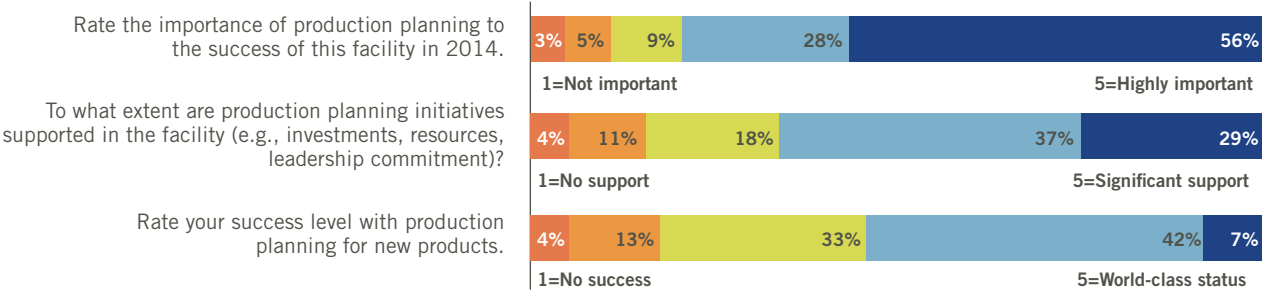
This process involves decision-making and allocation of physical assets (machinery and inventory) as well as soft assets (skills necessary to make or assemble new products, management talent to establish new processes and standards to control production). Without production planning, a great design can turn into a product that misses its window of opportunity and the revenues and profit that go with timely market entry.

Four out of five (84%) executives report that production planning for new products is important to their facility’s success in 2014. But, again, another execution gap looms: fewer manufacturers (66%) invest in supporting this initiative, or achieve success with it (49%) (Figure 6).

*“An organization’s ability to learn, and translate that learning into action rapidly, is the ultimate competitive advantage.”*

*Jack Welch, author, executive chairman of the Jack Welch Management Institute and former CEO of General Electric.*

**Figure 6. Production planning importance, support and success (% of facilities)**





One critical objective of production planning, according to the survey, is minimizing scrap and rework during product ramp-ups (Figure 7).

This is not surprising when looking at the associated costs. For example, 16 percent of manufacturers report scrap and rework rates of 4 percent of sales or higher: i.e., a \$50 million plant is effectively wasting \$2 million to revise or discard products. Poor delivery, machine downtime, and safety problems also dramatically impact the bottom line. As safety rates deteriorate, for instance, insurance

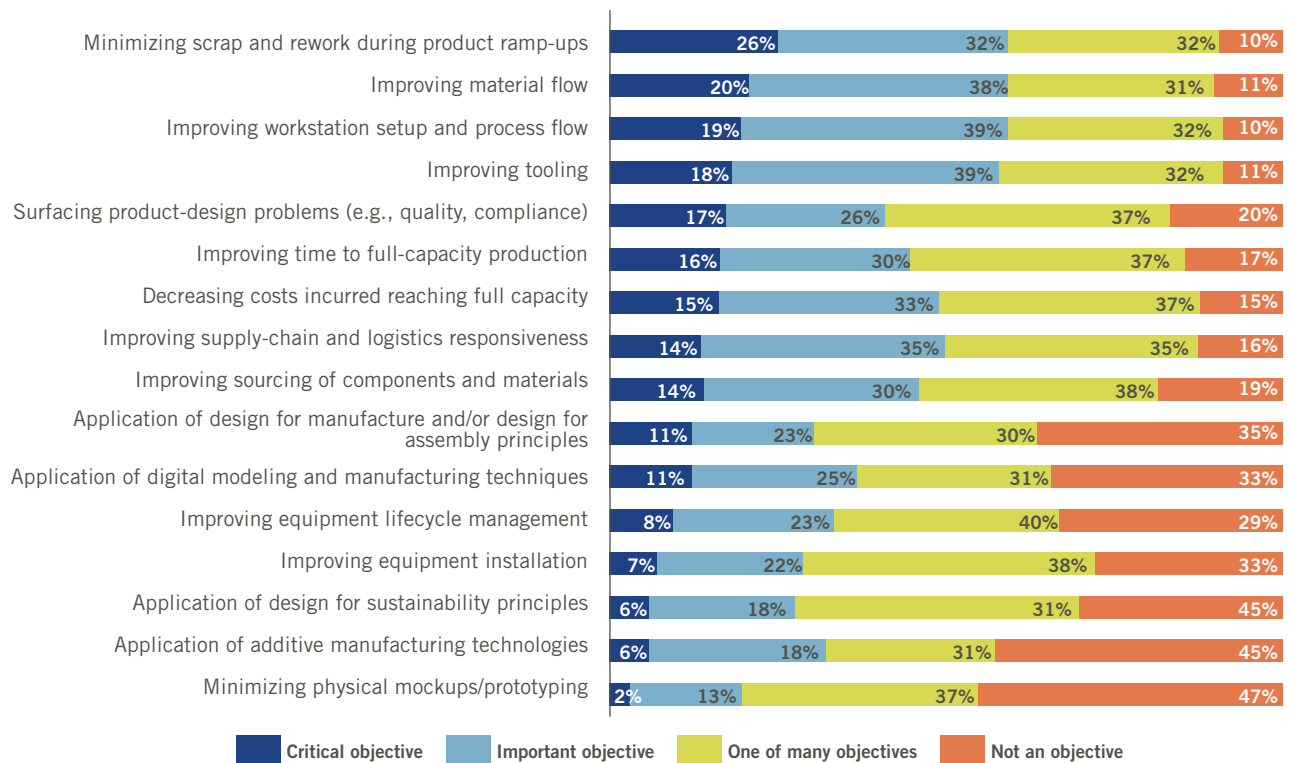
premiums and compensation payouts rise accordingly.

Manufacturers noted other struggles as well: One in five manufacturers fail to hit both the budget and time specifications for half or more of their product launches.

There is a high cost associated with sustaining the status quo, both in terms of profitability and human capital, as employees potentially lose motivation when not in a “winning” environment.

Manufacturers at or near world-class production planning recognize its importance, support it with investments and training, and enjoy improved product launch performance. Following this example, manufacturers should consider the need to train management and employees on how to improve the production-planning process to benefit from on-time and on-budget launches.

**Figure 7. Objectives of production planning (% of facilities)**



# AVERAGE Spending

With so much depending on these business outcomes, it is surprising that 43 percent of manufacturers have no formal knowledge transfer process in place and 40 percent have no regular training budget.<sup>1</sup>

In fact, 35 percent spend less than 1 percent on skilled workforce employee development.<sup>1</sup> In comparison, Association for Talent Development (ATD) BEST organizations, those that demonstrate a clear link between learning and performance across the enterprise, reported on average a 6 percent direct learning expenditure as a percentage of profits.<sup>5</sup>

Still, it is encouraging to see an increase in training dollars spent overall. According to *The Corporate Learning Factbook 2014*,<sup>6</sup> training budgets increased 15 percent on average in 2013. Organizations across the U.S. spent \$1,169 per learner on average, on learning and development initiatives in 2013, with technology companies spending the most at \$1,847 per learner.

*“We know that if we find the right people with the right attitude, who want to learn, we can leverage that for success today and into the future.”*

**Jackie Schulte**, director of human resources,  
SGS Tool Company.

The average annual spend<sup>4</sup> for external support reveals the extent to which some facilities are willing to invest in outside assistance and the best manufacturers are more willing to retain external experts to assist with their three key initiatives:

- ▀ Continuous improvement:  
\$99,517 (average annual)
- ▀ Workforce training and development:  
\$248,568 (average annual)
- ▀ Production planning for new products:  
\$336,352 (average annual)



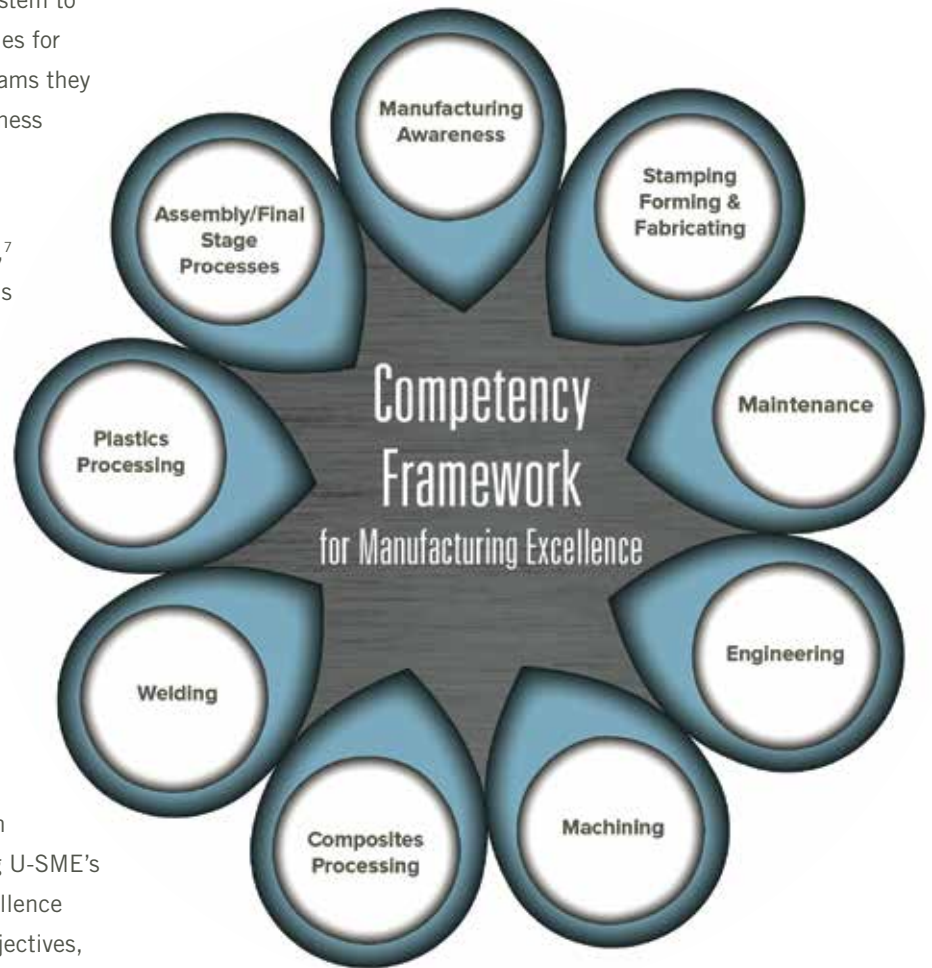
# TRAINING **Best Practices**

Successful companies recognize the importance of recruiting the right people for the right job and providing the right training. Current manufacturing training and development best practices often integrate competency models, blended learning and a data-driven approach.

**Competencies.** Some manufacturers are increasingly turning to competency models – a structured system to develop the needed knowledge, skills and abilities for specific jobs – to build the high-performance teams they need to meet the demands of their current business environment as well as in the future.

A study by Bersin & Associates, *Key Findings – Becoming a High Impact Learning Organization*,<sup>7</sup> indicates that high-impact learning organizations are better able to drive value from a well-designed, well-adopted and sustainable use of job/role profiles and competency frameworks. The study found that effective use of profiles and competencies provides a common language to describe talent throughout the organization. This language allows productive conversations in areas such as skills gaps, performance management, talent acquisition and leadership development.

In today's manufacturing environment it's necessary to validate that knowledge has been transferred – not just that a class has been completed. Competency models such as Tooling U-SME's Competency Framework for Manufacturing Excellence provide the rigor needed to meet ISO quality objectives, guidelines and reporting requirements, as well as those outlined by certification organizations such as National Institute of Metalworking Skills (NIMS), Manufacturing Skills Standards Council (MSSC), SME (CMfgT) and American Welding Society (AWS).



**Blended Learning.** One way companies can improve their workforce development is through a blended training approach, combining theory and application. Giving employees the ability to access training through various delivery methods such as instructor-led, online training and webinars, increases their opportunities for learning, and in combination, provides the consistency they need.


Each mode of training complements the others, and provides employees with multiple opportunities to learn and apply the material. For instance, employees that can access online courses to build their base of standardized knowledge will be more prepared to take advantage of their time with an instructor. Or as they move to on-the-job training, they will be ready to apply classroom or online knowledge. A blended training approach also gives employers the flexibility of customizing the mix to maximize outcomes.

**Data-Driven Approach.** Technology is changing the way people learn. Employers and employees expect training today to be on demand, anywhere, anytime. This approach, often based around online training, is gaining momentum with both employee training facilities and educational institutions – high school through college/ university level – which feeds the employee pipeline.

Technology empowers employees by providing access to tools, knowledge and other resources to help build them into high performers. This allows employees to access knowledge when they need it, no matter where they are, and can even help accelerate skill development.

Through a robust Learning Management System (LMS), it's easier than ever to track an employee's progress from onboarding through career management, allowing employers to design custom training programs for individuals and identify high potential team members.





## CASE STUDY

# Tool Company Celebrates Retention & Engagement

**Challenge:** Needing to address existing and projected skilled labor shortages, one international tool company recognized the urgency in finding ways to develop a future workforce to remain competitive.

**Solution:** The company started looking at how to address the pain about eight years ago and began to focus on building a strong program through training and recruitment.

The company began working with area schools, from junior high through college level, to establish a pipeline of future associates. It also adopted an internal training program, which included online training from Tooling U-SME.

The manufacturer employs Hoshin Kanri, a management system focused on helping employees understand the company's strategic direction and foster their participation in achieving it through continual improvement training.

Their model is based on strong metrics called Associate Integrated Management (AIM) Goals & Objectives. All department heads in the company meet monthly with the CEO and COO to review these AIM Goals & Objectives. These include individual, department and company goals related to sales increases, customer satisfaction, maintaining quality standards and associate development.

To achieve these goals, one important requirement is that all 270 associates throughout the organization, from entry level to CEO, receive 50 hours of training a year. Typically manufacturing associates take 10 to 20 Tooling U-SME courses per year to fulfill the requirement.

**Results:** The company's commitment to continuous improvement and developing its associates is paying off with metrics related to retention and engagement well above industry average, all helping stem the skilled labor shortage.

The manufacturer has just five percent turnover when many manufacturers are seeing turnover rates of 23 to 30 percent. In fact, the average associate has worked at the company for 15 years. Other success measures include a low absenteeism rate (1.8 percent vs. 3 percent industry rate) and low Workers' Compensation claims.

This focus on developing existing and future associates is helping the company combat a worrying skilled labor shortage and build a strong reputation as an employer of choice.



## CASE STUDY

# Training to Improve Quality

**Challenge:** A leading manufacturer of trucks, buses, and construction equipment, needed to address the increasing costs of quality due to a lack of knowledge from some of its employees.

The company knew it needed to retool its training program for its 1,000 blue-collar employees (UAW employees) and 200 white-collar, non-union employees. At the time the program was initiated, there was no option of advancement or personal development, engagement in education was low, and costs of quality with new machining and quality operators was high.

**Solution:** To address these challenges, the company created an incentive-based, online program to allow for advancement in current positions and pre-qualification for specific jobs (coupled with improved hands-on training). Through mutual agreement and funding with UAW, Tooling U-SME online courses were used. Machining and quality jobs became pre-qualified. Four levels of operators joined the training, with pay increases tied to lean manufacturing. Employees conducted all online coursework on their own time.

**Results:** Within two years, 47 percent of employees were enrolled in the Tooling U-SME online program.

In one year, the cost of quality with new operators in crank machining department fell from \$40,000 to \$0. One hundred percent of machining operators were at Level 1 and 43 percent of employees in the machining areas were at Level 2 or above – and seeing pay increases. The company was also seeing an improved skillset of quality technicians on entry.

Through a strong management commitment with operator buy-in and feedback, the program met with great success.

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<sup>3</sup>*Made in America Again, The U.S. Skills Gap, Could it Threaten a Manufacturing Renaissance?*, The Boston Consulting Group, August 2013.

<sup>4</sup>*Tooling U-SME Manufacturing Insights Report: Winning Practices of World-Class Companies*, The MPI Group, August 2014

<sup>5</sup>*State of the Industry Report*, ATD (formerly ASTD), 2013.

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<sup>7</sup>*Key Findings – Becoming a High Impact Learning Organization*, Bersin & Associates, 2012.

<sup>8</sup>*Effects on Education and Training on Human Capital – And Effects of Human Capital on Economic Activity*, Dr. Muhammad Tariq Khan, *International Journal of Information, Business and Management*, Vol. 6, No. 3, 2014.



# THE TERM “Human Capital” WAS COINED BACK IN THE 60s

by Nobel-Prize winning economist, Theodore W. Shultz, and later popularized by American economist Gary Becker.<sup>8</sup> Today, world-class organizations still abide by this idea that people are the ultimate resource when it comes to building a winning company.

Manufacturers seeking to obtain world-class status must move beyond the prevalent “execution gaps” where executives acknowledge that workforce development is important to the success of their facilities, yet provide low support for implementation.

World-class companies know there is a direct connection between a highly trained workforce and organizational improvements that boost the bottom line.

A well-trained workforce is a competitive advantage, allowing companies to drive innovation, customer satisfaction, quality, productivity and growth. A culture of learning, including a structured workforce development program, can lead to engaged and loyal employees, satisfied stakeholders and economic growth.



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## Contact

For more information on the importance of human capital and how it can impact your business goals, please call Tooling U-SME at 866.706.8665 or email [info@toolingu.com](mailto:info@toolingu.com).

## About Tooling U-SME

Tooling U-SME delivers versatile, competency-based learning and development solutions to the manufacturing community, working with more than half of all Fortune 500<sup>®</sup> manufacturing companies, as well as educational institutions across the country. Tooling U-SME partners with customers to build high performers who help their companies drive quality, productivity, innovation and employee satisfaction. A division of SME, an organization that connects people to manufacturing solutions, Tooling U-SME can be found at [toolingu.com](http://toolingu.com), [facebook.com/toolingu](https://facebook.com/toolingu) or follow @ToolingU on Twitter.

