

The background of the entire page is a photograph of two workers in a factory or workshop. A man on the left and a woman on the right are both wearing safety glasses and looking intently at a piece of machinery. The woman is adjusting a vertical component of the machine. The scene is brightly lit, and the workers are wearing maroon polo shirts.

BACK TO THE FUTURE: ON-THE-JOB TRAINING

Standardized Work Programs Boost
Manufacturing Competitiveness

A TALE OF TWO TRAINING APPROACHES

A World War II training video shows two scenarios. In the first, a bothered supervisor brings a new drill press operator over to her workstation. He quickly verbalizes instructions and vanishes, leaving the new worker to figure out the job on her own. The supervisor checks back from time to time, frustrated at the new employee's inability to perform the job correctly, which requires him to "retrain" her each time. Unsurprisingly, product errors are rampant, creating material waste, rework and lost productivity. Ultimately, after an on-the-job injury, the employee quits. The company must recruit and train another employee.

In the second scenario, the "boss" realizes it is time for the supervisor to receive training of his own. For success, it is clear that investing in a structured program that ensures both the trainer and employee know the expectations of training achievement is critical. The next time we see the supervisor he is transformed into a confident, competent and encouraging coach. He acknowledges that while proper on-the-job training (OJT) may take a bit more time in the beginning, it "saves a lot of time, money and headaches in the long run."



OJT Goal:

Accelerate workers toward desired performance in a consistent and measurable system of hands-on application.

OJT TODAY

Fast-forward 70 years. While specific job roles and skill sets may have evolved over time, OJT is more important than ever, especially with the rate of changing technology and the changing workforce.

The retirement of millions of experienced and knowledgeable workers is creating a situation similar to that during World War II, when the incumbent manufacturing workforce went off to fight and a “new” workforce was needed — and had to be trained quickly. At that time, OJT programs were mandated to provide the standardization needed to quickly build a strong, reliable and safe workforce.

In the past decades, OJT has become an inconsistent,

tribal knowledge-driven approach. The focus now is on formalizing — and validating — the transfer of knowledge from seasoned employees to younger members of the workforce.

With an incoming pipeline of unskilled workers, the importance of strong OJT is yet again a driver of manufacturing competitiveness.

In this white paper, Tooling U-SME explains the history of OJT and its proven methodologies, including the importance of training the trainers themselves. It also explores the risk of not developing a strong OJT program, and includes best practices to help companies improve metrics related to turnover, speed to productivity and more.

BUSINESS IMPACT

As Tooling U-SME’s white paper, “Proving the ROI of Training”¹ outlines, a successful learning culture ties directly to business impact. Key Performance Indicators (KPIs) are all greatly affected by a lack of skills. These include:

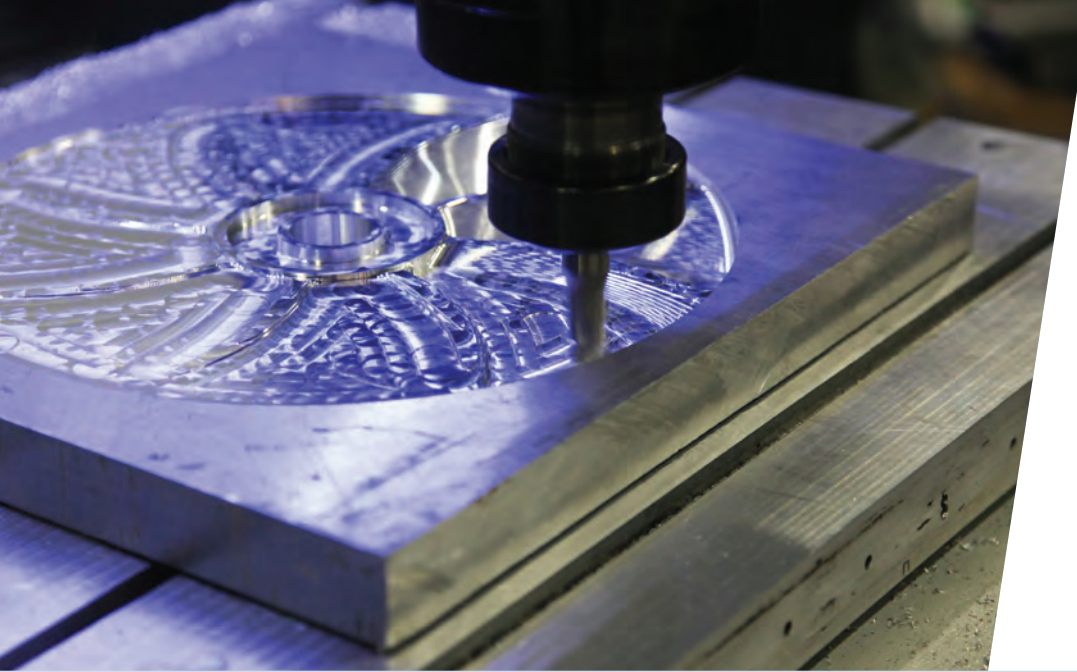
- ◆ Maintaining production and quality levels consistent with customer requirements
- ◆ Ensuring safe work practices
- ◆ Meeting needs for new product development and innovation
- ◆ Implementing quality improvement processes
- ◆ Enhancing employee engagement
- ◆ Improving employee retention

Standardization is the key to developing employees quickly, consistently and according to work instructions in order to positively impact business and financial goals. This is especially important during this revitalized “manufacturing workforce renaissance” era, where industry faces the challenge of developing the next generation of manufacturing workers.

Creating and implementing an OJT standardized work program, a formal training program that is conducted and evaluated in the work environment,² is necessary to combat the existing and pending skills gap that threatens productivity, quality, innovation, safety and profitability.

¹ “Proving the ROI of Training: Moving from Expense to Necessity,” Tooling U-SME, 2016.

² U.S. Department of Energy Handbook, “Guide to Good Practices for On-the-Job Training,” April 1998.



TODAY'S ENVIRONMENT: SKILLS GAP

Over the next decade, nearly 3.5 million manufacturing jobs will likely need to be filled. Because of the skills gap, 2 million of those jobs are expected to remain unfilled.³

This is due to retirements and economic expansion, as well as changing technology, reshoring and the fact that fewer students are pursuing science, technology, engineering and math (STEM) careers.

According to the same report, six out of 10 positions remain unfilled due to the talent shortage. That cannot be quickly remedied as it takes an average of 70 days to recruit skilled production workers.

This has serious consequences for the manufacturing industry, which is overwhelmingly not prepared.

Tooling U-SME's Workforce 2021 Assessment, a five-year study, reveals companies are falling dangerously behind when it comes to addressing the manufacturing skills gap.

- ◆ Nearly nine out of 10 (88%) say that their company is having problems finding skilled workers in manufacturing.
- ◆ Three out of four (76%) respondents say the training their company provides its manufacturing employees is not adequate to meet the needs of the organization going forward.
- ◆ Less than half (45%) of respondents say their company has personnel designated to manage training and employee development.

Companies need to focus now on developing a strategic learning and development program, including OJT, to ensure a seamless transition despite the knowledge loss from retirements and ongoing talent challenges.

³ "The Skills Gap in US Manufacturing: 2015 and Beyond," Deloitte and The Manufacturing Institute, 2015.

A STRONG OJT PROGRAM HAS OTHER BUSINESS BENEFITS, INCLUDING:

Competitive Advantage

There is a significant upside to banking on human capital: Companies that focus on learning and development have a competitive advantage.

For instance, a study by Bersin & Associates, titled “High-Impact Learning Culture: The 40 Best Practices for Creating an Empowered Enterprise,”⁴ shows high-impact learning organizations (HILOs) that have a strong learning foundation in place tend to significantly outperform their peers in several areas:

- ◆ 32% more likely to be first to market
- ◆ 37% greater employee productivity
- ◆ 34% better response to customer needs
- ◆ 26% greater ability to deliver quality products
- ◆ 58% more likely to have skills to meet future demand
- ◆ 17% more likely to be market share leaders

To remain ahead of the competition, companies need to realize that investing in people is as critical as investing in equipment or technology.

Industry Standards

If that isn't incentive enough, industry standards such as ISO⁵ support this commitment to developing well-trained workers. For instance, ISO outlines expectations for competence, emphasizing that the organization shall:

- ◆ Determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system.
- ◆ Ensure that these persons are competent on the basis of appropriate education, training or experience.
- ◆ Where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken.
- ◆ Retain appropriate documented information as evidence of competence.

Safety

One often-overlooked benefit of a standardized OJT program is increased safety. Safety is reinforced through the review of job safety analysis documentation, and highlighted during instructor demonstration and trainee practice of tasks during standard work training. Typically, safety issues decrease when teams are well trained, practices are documented and quality work is delivered consistently.

⁴ “High-Impact Learning Culture: The 40 Best Practices for Creating an Empowered Enterprise,” Bersin & Associates, June 10, 2010.

⁵ ISO Section 7.2 – Competence.

THE NEW LEARNING MODEL

With the evident benefits of a learning and development program that includes OJT, the next question is, “How can my company implement or improve its current program?”

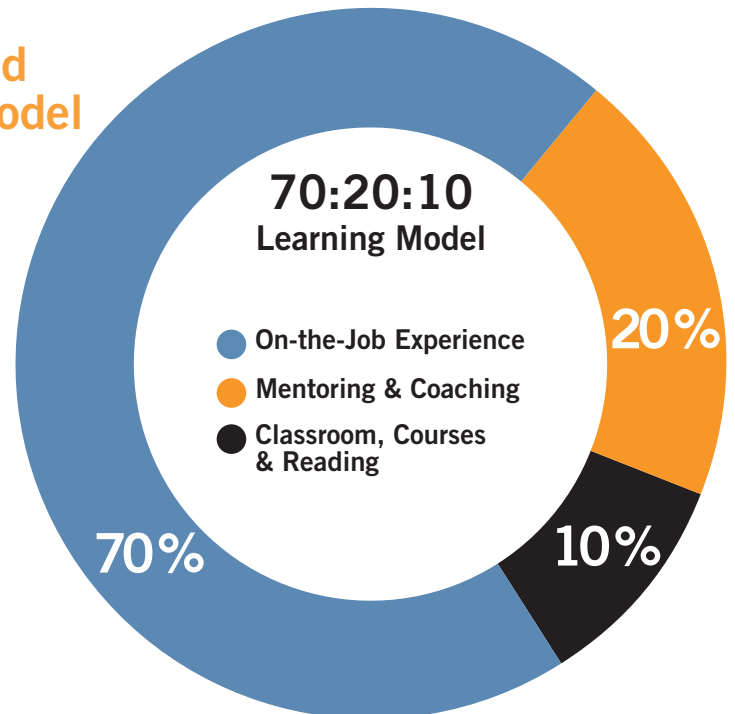
For years, the industry has aligned well to a 70:20:10⁶ learning model to structure learning and development programs. This model suggested 10% of standardized training takes place in the classroom through courses and reading such as compliance training; 20% is focused on mentoring and coaching by more experienced workers; and 70% is devoted to job experience, where a worker learns informally through experiences and builds tribal knowledge through those experiences.

Based on the importance of OJT, Tooling U-SME suggests a flipped viewpoint of the model, where much of the on-the-job experiential learning is formalized with a structured OJT program.

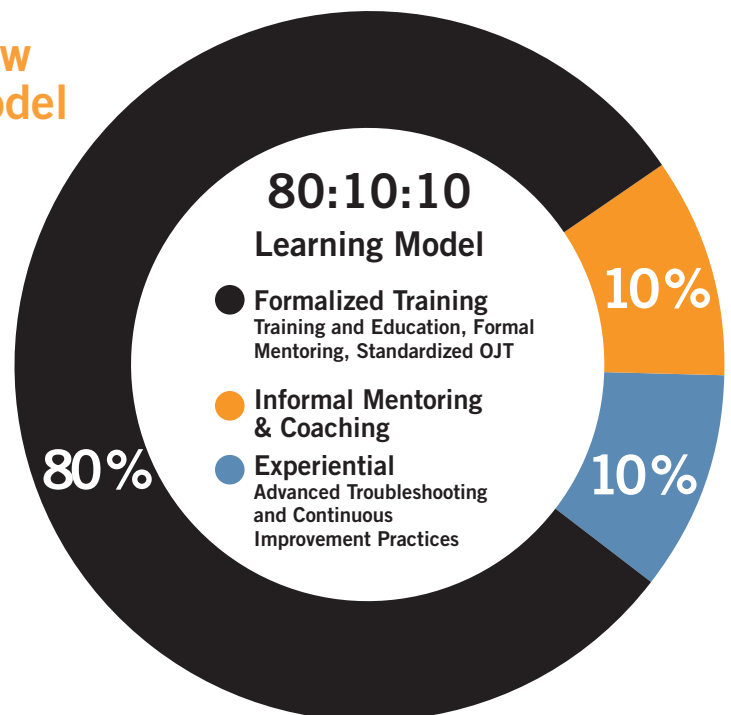
This new 80:10:10 model provides standardization of both the mentoring and experiential elements, allowing for a greater percentage of the model to be dedicated to formalized learning and development practices.

Thus, 80% of a worker’s learning is formalized, and the desired worker performance is met and validated. This dramatically reduces the amount of time it takes to attain job competency. The informal mentoring/coaching and experiential modes enhance a worker’s job comprehension to a level of expertise that includes the ability to perform advanced troubleshooting and continuously improve the role.

Old Model



New Model



⁶ “70-20-10 Model of Development,” Bersin by Deloitte.

OJT: THE BASICS

“ Standardized on-the-job training helps secure Malnove’s future by providing consistent, solid training to every new associate. This training will help employees want to stay for the long haul and become experienced, knowledgeable associates, which of course plays a major role in the future of the company, helping us stay ahead of our competitors. ”

– Martin Ojeda, Die Cutting Pressman Lead, Malnove Incorporated

Simply, OJT teaches standard work: This is your machine, your job, your steps. It is a step-by-step process of a particular job on the shop floor. Strong OJT standardization, under the guidance of qualified instructors, is the key to developing and validating worker skills.

As the learning model previously discussed demonstrates, OJT is not practiced in isolation. It should be part of an overall formalized learning and development strategy. OJT works hand-in-hand with a blended learning approach, which focuses on teaching both the basic knowledge requirements for a job and the development of core skills necessary to perform the work.

The role of OJT is to provide workers with the ability to apply that knowledge and those skills to standard work

Learning Definitions⁷

Formal learning is the learning that occurs in an organized and structured environment (e.g., in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner’s point of view.

Informal learning is the unofficial, unscheduled, impromptu way people learn to do their jobs. It can happen intentionally or inadvertently. The learner sets the goals and objectives. Learning is not necessarily structured in terms of time and effort; it is often incidental and unlikely to be assessed or lead to certifications or certificates of completion.

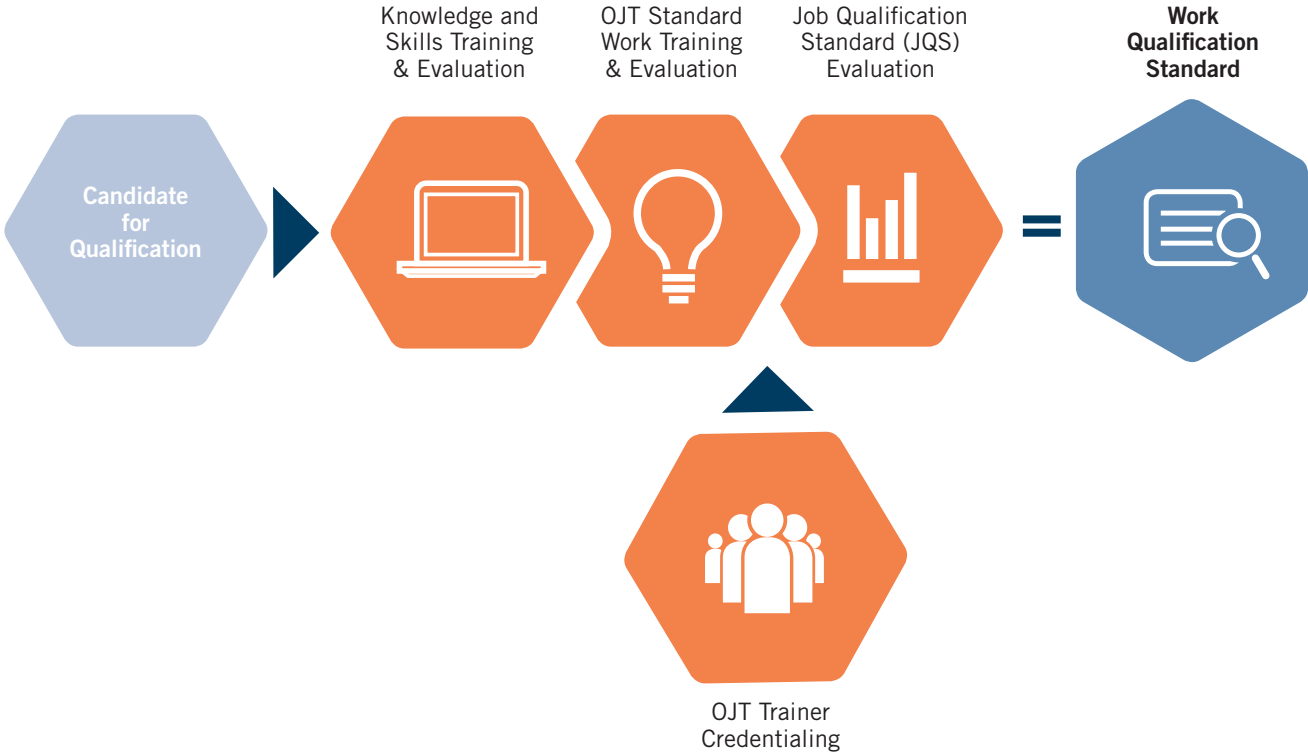
and to do it in an efficient manner that verifies KPIs are met. OJT tools are needed to monitor and measure job competency in order to ensure consistent development in roles and to provide individuals with pathways to reach the next level of their careers.

⁷ “Innovative Performance Support: Strategies and Practices for Learning in the Workplace,” Conrad Gottfredson, Ph.D., and Bob Mosher, December 9, 2010.

WORKER QUALIFICATION STANDARD

An effective OJT program is part of the overall process for the qualification of workers in a particular job role. Four main elements are required to develop and qualify a worker through training and evaluation best practices.

Developing Standard Training Around the Qualification of Workers



QUALIFICATION PROCESS

As outlined in the diagram on page 8, there are four main elements involved in setting a worker qualification standard that promotes productivity and worker safety.

1 Knowledge and Skills Training & Evaluation contains the prerequisite curriculum required to prepare workers for their OJT sessions. Typically, this includes orientation, safety and compliance training and any job prerequisite knowledge that would be applied on the job. These training requirements can come in the form of online classes, instructor-led training or certifications. In addition, many programs contain off-floor labs that allow workers to practice and develop critical skills prior to OJT. The goal of this training track is to prepare workers to apply defined knowledge and skills to standard work.

2 OJT Standard Work Training & Evaluation teaches workers their job-specific and task-specific standard work. The OJT program should consist of a sequence of hands-on learning activities, which will help workers attain the desired job qualification during their end-of-training evaluation. In advance, it is important to validate work instructions that are often outdated or don't exist at all. For a company to reach its performance goals, it is critical to have validated standard work that guides employee training. This validation methodology will help companies avoid any disconnect between training and the actual work needed to meet production goals.

3 Job Qualification Standard (JQS) Evaluation is the capstone demonstration of critical job-related tasks within evaluation criteria. This includes all OJT activities that were taught and acknowledged by the trainer and trainee. It is a best practice to have another trainer or supervisor perform the final evaluation of personnel, putting a firewall between the training and certification of the worker.

4 OJT Trainer Credentialing ensures OJT trainers have a competency in delivering training in a consistent and concise manner. Programs, such as Tooling U-SME's interactive Train-the-Trainer session, elevate frontline supervisors' and team leaders' capabilities. Grounded in theory and reinforced through practice and application, these workshops build the required knowledge and skills for new-hire and incumbent OJT training.

“ It is important to standardize every procedure, so we know it will be done the same way as last time. This is consistency. ”

– **Bruce Hudspath, Printing Lead,**
Malnove Incorporated

OJT BEST PRACTICES

To ensure training and development is benefitting the bottom line, Tooling U-SME shares these OJT best practices:

Standardized Tools

Performance-based training programs require the use of standardized OJT tools and techniques to ensure consistent delivery of training. One tool is an OJT Guide that outlines instructor and trainee activities, learning objectives, training content and the resources (equipment, material, etc.) necessary to consistently conduct training.

Train-the-Trainer

Spending time educating those who work closely with new and existing team members is imperative for success. Frontline supervisors need to be given the skills to properly train and mentor their workforce. Without this critical competency, these managers will contribute to attrition in high numbers.

Create Clear Progression Models

A methodical and visible standardized learning and development program, including OJT, will build strong teams. Employees, especially millennials, desire documented expectations and plans to help them reach those expectations and beyond. Tribal knowledge — the informal dissemination of information by more senior employees — is no longer enough.

Evaluate, Validate and Measure

As with all training programs, OJT should align with an organization's business needs. Tracking KPIs related to company productivity and growth helps define return on investment. Today, training programs must validate their worth by demonstrating positive impact on the bottom line.

Does Your Company Have an OJT Program with Best Practices?

If you answer yes to these five questions, you have a gold-standard OJT program based on best practices. If not, the questions will identify areas of improvement.

Does your organization:

1. Have documented and validated standard work?
2. Have a system to archive and document tribal knowledge through the practice of OJT Guide Development?
3. Consistently deliver training as one voice to your trainees?
4. Verify that trainers have the skills to teach others?
5. Have a system in place to validate skills through measured and unbiased assessment?

Management Commitment

The ultimate success of any training program requires a strong commitment to training by both line organization management and training management. These groups must align regarding the goals and content of an OJT program in order for training to be effective.

Build a Learning Culture

OJT is a critical part of a learning culture. It ensures a training program brings consistent and efficient learning to an organization, providing a competitive advantage. It is important to build a company-wide learning culture around the idea that everyone must be engaged and always learning, whether that means new technology or new approaches.

CASE STUDY: ASAHI KASEI PLASTICS RELIES ON OJT FOR PLANT START-UP

In April 2016, Asahi Kasei Plastics opened a \$30 million plastics plant in Athens, Alabama, and needed to quickly onboard and train 45 technicians to ensure they were shop-floor ready.

Asahi Kasei, known for its innovation and forward thinking, realized that an upfront investment in building a strong learning and development program, including on-the-job training (OJT), would save time and costs in the long run.

“If employees are not trained properly, they will not have the confidence to do their job and will become unhappy and search for other opportunities,” said Mari Burt, training and wellness coordinator, Asahi Kasei. “A formal onboarding and OJT program has a direct, positive impact on productivity.”

The training team, which included Tooling U-SME, set out to create an entirely new program at the Athens facility, with special emphasis on OJT.

“In addition to classroom time, the hands-on of OJT is important so that employees learn how to perform a job day to day,” said Bunni Wheeler, supply chain administrator for the company’s Athens facility.

Wheeler said that the program could not be modeled on the company’s existing plant in Fowlerville, Michigan, because different processes and equipment were used at the new facility. In addition, employees in Athens are multiskilled technicians who are trained to do every job at the plant instead of specializing in one area.

Asahi Kasei used a two-pronged training approach that included:

- ◆ Creating a learning and development initiative covering onboarding and an OJT standardized work program. This entailed reviewing, documenting and validating all work instructions, including the creation of job qualification standards (JQS). A comprehensive operator manual (OJT Guide) was created.
- ◆ Initiating Tooling U-SME’s Train-the-Trainer program, with the goal of having one certified trainer per shift.

“We have learned that just because someone is great at a specific skill, it doesn’t mean that they are the best for training,” said Burt. “The Train-the-Trainer program helps to ensure we have the right trainers in place to build our workforce.”

Based on this early success, for continued growth, another eight to 10 employees will be hired as a third production line comes online.

Fortunately for both the company and employees, a comprehensive standardized work program that covers onboarding and OJT will be in place, with strong trainers leading the way to world-class productivity.

“We can build on what we did right and wrong from our previous experience,” said Wheeler. “With OJT and JQS in place, training for the new shift should be very streamlined.”

HISTORY LESSON: REMEMBER ROSIE THE RIVETER?

Three-quarters of a century after World War II, the manufacturing industry is facing a similar challenge when it comes to internally developing qualified personnel.

This time, our challenge is not war, but mass retirement. In 2016, the oldest baby boomers turn 70,⁸ and while some are staying on the job longer than previous generations, many are stepping away.

The pressing need today is the same: to get workers up to speed quickly. Without that, companies risk falling behind competitors when it comes to productivity, quality, innovation, safety and profitability.

Fortunately, we can reference the successful World War II model⁹ for OJT.

Back in 1942, to help maintain U.S. manufacturing competitiveness during the war, President Franklin D. Roosevelt signed an executive order establishing the War Manpower Commission,¹⁰ setting in motion the standardization of OJT programs.

Resulting from this order, training guidelines that focused on developing new workers safely, quickly and correctly were developed and supported by manufacturing companies and union representatives. Women were needed to fill many traditionally male manufacturing jobs and roles during the war, and they received the same training as men.

In fact, between 1940 and 1945, the female percentage of the U.S. workforce increased from 27 percent to nearly 37 percent¹¹, successfully solving the skills gap problem of the time. Standardized methods in OJT were critical to training this new workforce and manufacturing wartime products.

Today, there is a need to bring back these good practices to avoid inconsistent OJT implementation that leads to gaps in training and mentoring.

It is also important to provide those who have training and development responsibilities with the knowledge and skills to deliver OJT.



⁸ "Boomers Turn 70," AARP, January 2016.

⁹ "The Training Within Industry Report" 1940-1945.

¹⁰ "Executive Order 9139 Establishing the War Manpower Commission," April 18, 1942, The American Presidency Project.

¹¹ "American Women in World War II," History.com

STANDARDIZATION APPEALS TO MILLENNIALS

Just as in the 40s, manufacturing is faced with a new labor pool to develop. Seventy-five million millennials¹² are out there looking for careers. They command the largest share of the labor market, more than Baby Boomers and Gen Xers¹³.

It's important for manufacturers to realize that traditional methods of developing this large pool of workers will typically not work¹⁴. Tribal knowledge and unstructured OJT will not connect with millennials, resulting in a revolving door of workers. A standardized OJT program, outlining clear expectations and career pathways, is the answer.

Millennials at a Glance

- ◆ 18-34 (ages in 2015)
- ◆ Grew up in a world of uncertainty (layoffs, debt, terrorism)
- ◆ 32%¹⁵ are still living at home

Millennials on the Job

- ◆ Millennials thrive on constant learning. Onboarding and training programs, based on connection and experiences, address this desire. Blended learning allows workers to learn in different ways and break up the monotony of one method.
- ◆ Millennials want to see clear career pathways. It is important to create and administer a formal training program tied to competency development and career growth — and to communicate that it exists.
- ◆ Millennials are eager to help solve a company's problems with their talents and skills, and want to know how their work fits into the big picture. Teach millennials (and all employees) how and why each part is used, and how the entire job connects to the company's vision

¹² "Millennials Overtake Baby Boomers as America's Largest Generation," Pew Research Center, FactTank, April 25, 2016.

¹³ "The 2016 Deloitte Millennial Study: Winning Over the Next Generation of Leaders."

¹⁴ "Embracing Millennials: Closing the Manufacturing Skills Gap and Gaining a Competitive Advantage," Tooling U-SME, 2015.

¹⁵ "For First Time in Modern Era, Living With Parents Edges Out Other Living Arrangements for 18- to 34-Year-Olds," Pew Research Center, May 24, 2016.

TRAIN-THE-TRAINER

Visionary companies realize that training the trainers is a game-changing strategy. Unfortunately, not all manufacturers have discovered this advantage.

Many manufacturing organizations tend to promote higher performers into lead roles without giving them the proper training to develop and mentor their teams into higher performers.

This is a dangerous approach that can have a negative effect on an organization. Poor OJT trainers can lead to low morale, ineffective training and delivery, and high attrition, resulting in adverse performance and unmet financial goals.

With an increase of new hires from an unskilled talent pool, it is more important than ever to provide trainers with a competency in delivering training in a consistent and concise manner.

Training programs that elevate a frontline supervisor or team leader's competency to develop and conduct new-hire and incumbent OJT within a manufacturing environment is necessary to deliver a consistent learning and development experience.

Trainers must understand the development and delivery of OJT, and participate in ongoing development and mentoring sessions that cover assessment, preparation, creating a positive learning environment, facilitating learning and evaluating performance.

For success, there must be ownership by frontline supervisors who have responsibility for organizing and conducting training to meet production performance requirements. They must have accountability to conduct training, verify the results of the training, and remain a champion of the learning culture.

Metrics can be built into trainers' annual performance reviews with financial incentives. Well-trained supervisors and managers will also feel better equipped to deal with team members of all ages and backgrounds, and have the added reward of being appreciated and respected by their teams.



Malnove is developing best practices as part of its worker qualification program including Knowledge and Skills Training and Evaluation, and building out a critical component: standardized OJT. (See page 8 for more on the Worker Qualification Standard.)

CASE STUDY: MALNOVE DESIGNS NEW LEARNING AND DEVELOPMENT PROGRAM

For nearly 70 years, Malnove — one of North America’s largest folding carton designers and manufacturers — has been committed to continuous improvement, investing in world-class facilities, equipment and systems.

It’s no surprise when the talent development team proposed upgrading the company’s learning and development approach, Founder and CEO Paul Malnove and the management team were 100 percent on board.

“We have found that engaged associates are happy, long-term and productive associates,” said Craig Johnson, learning and development specialist. “Through our engagement studies, we know our associates want learning and development opportunities, and we are committed to delivering those through an on-the-job training standardized work program.”

Johnson says this approach can help reduce turnover and boost productivity among its 700 associates across three manufacturing sites in Utah, Nebraska and Florida.

“A reduction in variation through standardized work translates to the bottom line,” said Johnson, who has a background in Lean and Six Sigma.

In the beginning stages of this initiative, the company set

up Malnove University. With Tooling U-SME’s help, the team first focused on creating job qualification standards, which include a list of competencies around knowledge, skills and abilities associated with each task. The next step is creating a curriculum to outline exactly how content is delivered to each learner (i.e., online, video, instructor-led, OJT) and on what schedule.

Another important aspect of the learning and development initiative is the new Train-the-Trainer program.

“It’s not enough to train the workforce; you also have to train the trainer. The training field can change fast, which makes training for trainers crucial,” said Jason Vernon, operator, Malnove, one of the company’s new trainers.

As part of its program, Malnove has identified two trainers per plant.

“We want to ensure the message is standard, no matter who delivers it or where,” said Johnson.

Malnove also put in place a robust Learning Management System (LMS), which allows the company to easily track training, provide assessments and print reports.

ON-THE-JOB TRAINING BOOSTS BOTTOM LINE

The retirement of millions of experienced and knowledgeable workers is creating a situation similar to that during World War II, when the incumbent manufacturing workforce went off to war and a new workforce was needed.

Out of necessity, on-the-job training (OJT) programs were developed to provide the standardization needed to quickly build a strong, reliable and safe workforce.

Today, there is a need to bring back these strong practices. This approach is critical due to the lack of strong competency-based apprenticeship programs and an incoming, often unskilled workforce.

The importance of creating and implementing a strong OJT standardized work program is, yet again, a driver of manufacturing competitiveness, tied directly to enhanced productivity, quality, innovation, safety and profitability.

This is a call to action for the industry. If manufacturers haven't committed to creating a standardized OJT program using best practices, they should before their competitors do.

Contact

For more information about Tooling U-SME's on-the-job training standardized work programs and train-the-trainer initiatives, please call 866.706.8665 or email 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® manufacturing companies, as well as 600 educational institutions across the country. Tooling U-SME partners with customers to build high performers who help their companies drive quality, profitability, productivity, innovation and employee satisfaction. Working directly with hundreds of high schools, community colleges and universities, Tooling U-SME is able to help prepare the next-generation workforce by providing industry-driven curriculum. A division of SME, a nonprofit that connects all those who are passionate about making things that improve our world, Tooling U-SME can be found at toolingu.com or on Facebook (facebook.com/toolingu) and Twitter (twitter.com/toolingu).



