



Training Within Industry (TWI)

Forging Standardized Best Practices
with the Job Instruction Methodology





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TWI helps you maintain advantages discovered by Kaizen Events

Sometimes the most simple answers are the best answers to complex business problems.

Training Within Industry, or "TWI", is a straight-forward solution that solves a host of business challenges yet remains undiscovered by too many business owners. Three big issues we hear owners complain about quite frequently can all be addressed using this fundamental Lean tool.

1. "Lean is frustrating us because it's difficult to sustain the changes we identify during our Kaizens."

You can sponsor a Kaizen event that shows you how to reduce setup time by 75%. But then, a few months later when you go to check in on your progress, you discover the changes weren't implemented in the fashion they were conceived of during the Kaizen. The end result: you're not getting results!

I've been in that situation, and spent a lot of time trying to figure out where I went wrong when I owned my own business. Then I realized what we failed to do in our Kaizens was implement a system to document the new processes with standard work and train people rigorously in how to make the changes. We realized we didn't know *how* to train them. So we had great ideas in our Kaizens, but lacked a good way to implement them in a way that really "stuck."

2. "My workforce is chock full of tribal knowledge, but a lot of it is about to walk out the door as people retire!"

You've invested a lot in your workforce. Now they're aging and getting ready to retire. What's going to happen to all that knowledge? How can you prevent it from being lost, and how can you ever transfer it easily to someone new? A big loss of "tribal knowledge" can severely hamper a company's operation, so it's imperative to be prepared well in advance of losing key employees.

3. "I need an experienced workforce. I can't seem to find CNC machinists, inspectors, and technicians with enough experience."

Everyone seems to be in the same bind over finding qualified workers these days; except those companies that have found the key to creating a more qualified workforce by investing in the right type of training.

How do your workers gain experience? Watching others through On the Job Training is pretty common, and pretty informal. That usually means it works "pretty well," but not always well enough. The individuals your staff learns from have really never been taught how to train. TWI offers a simple, powerful method that delivers lasting results.

proper Job Instruction can eliminate 80% of the most common problems

The TWI Methodology: How it Works

Training Within Industry (TWI) has been called the most underrated achievement of American 20th century industry. This unsung hero played a critical role in 20th century America's war industry. With its simple genius, it helped ramp up a workforce in record speed and to outstanding results. In fact, proper Job Instruction can eliminate 80% of the most common problems related to safety, quality, productivity and personnel.

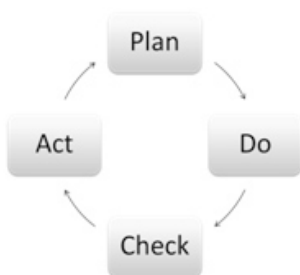
TWI teaches workers more than just what to do to complete a specific task. It also reinforces how to do the job, and makes them understand why the job must be done this way. Showing them the important steps of the task at hand, then reinforcing the key points related to those tasks, and explaining the reasons why the job is done this way is a proven methodology for helping a worker come up to speed quickly and accurately.

TWI applies to anyone who teaches anybody to do anything. It is a timeless and practical teaching tool.

The Job Instruction Training element of TWI is THE WAY to get A PERSON to quickly remember how to do A JOB - quickly, efficiently and safely.

Clarity is key to the TWI method, as is reinforcement. Together these two elements help the student to quickly remember how to do a job.

One on one training using Job Instruction breaks the work down into individual tasks/job elements that need to be taught. Like other Lean processes, Job Instruction Training follows the Plan-Do-Check-Act method.



Plan: Prepare the Worker

- Put the person at ease
- State the job
- Find out what the person already knows
- Get the person interested in learning the job
- Place the person in the correct position

emphasis
on learning
by doing

Do: Present the Operation

- Tell, show, and illustrate one **Important Step** at a time
- Do it again stressing **Key Points**
- Do it again stating **Reasons for the Key Points**

Instruct clearly, completely, and patiently, but don't give them more information than they can master at one time

Check: Try - Out Performance

- Have the person do the job - correct errors
- Have the person explain each **Important Step** to you as they do the job again
- Have the person explain each **Key Point** to you as they do the job again
- Have the person explain **Reasons for Key Points** to you as they do the job again

Make sure the person understands
Continue until **you** know they **know**

Act: Follow Up

- Put the person on their own
- Designate who the person goes to for help
- Check on the person frequently
- Encourage questions
- Taper off extra coaching and close follow up

The methodology behind TWI's Job Instruction includes telling the student the key points about the job as well as the reason for doing the job well. Because it emphasizes "learn by doing," the lessons learned from Job Instruction in TWI are immediately applied.

Once trained in TWI, staff can teach others the methodology - a built-in multiplier that spreads the training investment.

Creating a Job Breakdown sheet is key. It should look similar to sheet on the following page.

Document: _____ Rev #: _____ Date: _____

JOB BREAKDOWN SHEET

Operation:
 Parts:
 Tools & Materials:
 Common Key Points:

#	IMPORTANT STEPS	KEY POINTS	REASONS
	A logical segment of the operation when something happens to advance the work	Anything in a step that might- 1. Make or break the job 2. Injure the worker 3. Make the work easier to do, i.e. 'knack', 'trick', special timing, bit of special information	Reasons for the key points
1			
2			
3			
4			
5			
6			
7			
8			

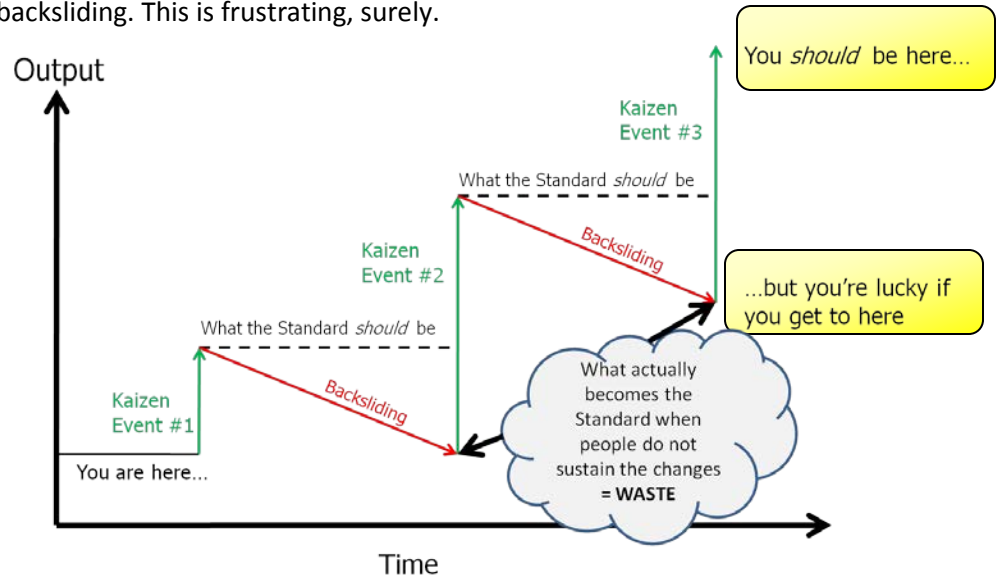
WHAT

HOW

WHY

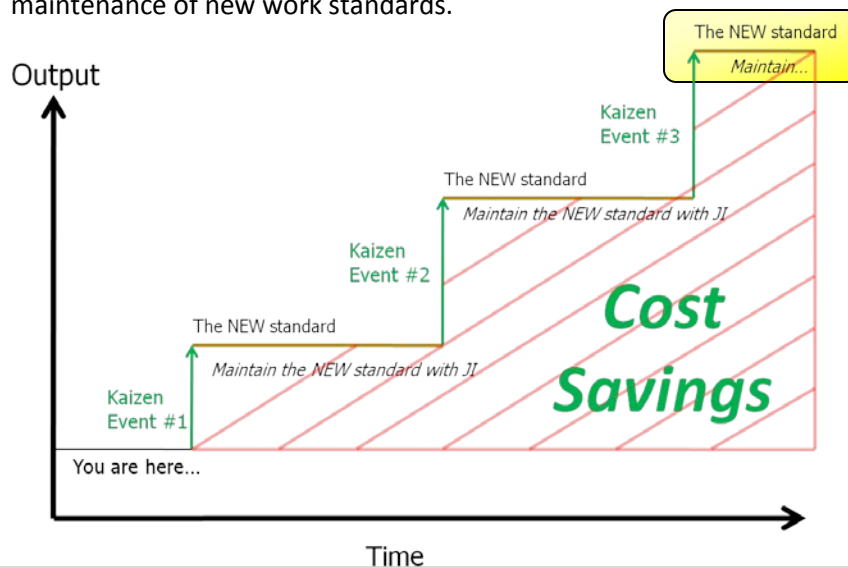
If your organization has embarked on a Lean journey, TWI is also an important tool that can help you sustain Lean transformation efforts. It's normal to hold a Kaizen Event, for instance, and then experience a period of backsliding. This is frustrating, surely.

proper Job Instruction prevents backsliding after Kaizen Events



We have witnessed time and again that this backsliding is primarily the result of standards not being properly taught, absorbed, and enforced. So after three Kaizen Events, you might expect to have attained great results...yet a lesser "standard" is observed to actually be in place because improperly trained staff has not sustained the changes identified through the Kaizens.

Using Job Instruction techniques, the new, higher standard you were hoping to achieve is actually more possible to attain. Job Instruction, done properly, helps your employees maintain the new standard - so there's no backsliding. The result? The entire shaded area in the graph to the left represents the cost savings attained through proper Job Instruction and the resulting maintenance of new work standards.



Using TWI in WWII, US built:

- **24** Essex class "fleet" carriers
- **9** Independence class "light" carriers
- **122** "escort" carriers

Japan built

- **4** fleet carriers without TWI in the same time period!

History of TWI

At the time that TWI was introduced in the 1940s, there was no labor-ready workforce in the USA. The bulk of America's skilled workers were serving in the war effort, leaving a raft of unemployed and unskilled potential laborers behind.

By implementing the principles of TWI, unskilled laborers quickly learned the tasks required to do their jobs, and do them well.

Rosie the Riveter is, in a way, the poster child for TWI! People got experience by learning from experienced people with this method - and the learning stuck.

After the war ended, the US Government actually brought the principles of TWI to Japan, where companies like Toyota realized its power.

It's actually ironic that many American companies look to Japanese companies as models of Lean innovation, since these methods actually originated in the US.



TWI's Impact on the B-17 "Flying Fortress"

- 60% reduction in total hours/airplane
- Fly-a way's soared to 364/month in 1944 versus 75/mo in 1941
- Cost per plane dropped to \$139,254 from \$242,000



The simplicity of TWI is its genius.

TWI teaches you how to teach.

"If the student hasn't learned, the instructor hasn't taught."

The simplicity of TWI is its genius. TWI teaches you how to teach.

Job Instruction Training helps companies tackle major issues by establishing best practices and then training to those best practices. Some areas where we've seen it produce breakthrough results include:

Production Problems

- Deliveries delayed because of errors in ordering parts, supplies, medicines
- Parts returned by other departments because they were not made right
- Samples backed up at the lab
- Excessive wear and tear on equipment

Safety Problems

- Safety equipment not used properly
- Poor shop housekeeping
- Personnel don't know safety rules
- Personnel don't know hazards of their jobs

Quality Problems

- Wrong tests ordered for a patient
- Too much scrap or re-work
- Fixtures and gauges not used properly
- Errors on invoices

Personnel Problems

- Employees transfer because they think they can do better on other jobs
- Employees claim to have good experience but they don't produce
- Can't get experienced personnel any more
- Employees get discouraged learning the job

How do Job Instruction programs attack these issues? By thoroughly analyzing a problem and then establishing new best practices to address it. Documenting those best practices is not enough. To solve the problem with true impact, you must train workers TO the new best practices. This is where TWI comes in. It gives you the tools to train properly. In fact, the thesis of the TWI model is *"If the student hasn't learned, the instructor hasn't taught."*

While there are many other training methods one could use to teach employees how to do specific jobs (including Telling, Showing, Question & Answer, Documentation & Testing, or any combination of these), none of these methods come close to the effectiveness of TWI Job Instruction.

TWI Job Instruction can be mastered in just 5 two-hour teaching sessions, and its impact lasts in perpetuity.

Where TWI helps most is in areas where there are repetitive problems in your business. That's always the first place to begin teaching. Because students will be learning by doing the job right using Job Instruction techniques, they will quickly be able to do their job well. The business will experience fewer errors, less scrap and rework, and greater productivity.

"I can't see how standardized work can function without JI in place underneath to support it in the long run... Mr. Ohno [*developer of Toyota Production System*] would agree that **JI had by far the biggest impact on TPS formulation.**"

- Isao Kato, Training Materials Developer, Toyota Production System

Source:
www.artoflean.com

For information about how your company can employ TWI's Job Instruction methods, contact us.

800.266.6672
www.connstep.org

