LEAN PROGRESS

5 LEAN PRINCIPLES

♦ Directly observe work as activities, connections and flows

♦ Systematic Waste Elimination

♦ Systematic Problem Solving

♦ Establish High Agreement of both What and How

♦ Create a Learning Organization

Improving Quality Through Waste Elimination

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Total Quality – you've heard the word. You've seen the acronym. But, what does it mean within the framework of lean manufacturing systems?

The majority of quality efforts focus on two things: quality control ~ based on standards and inspection, and quality prevention ~ based on techniques such as error proofing. Most people do not realize the affect that the overall manufacturing system has on quality. Waste elimina-

tion in the manufacturing environment, usually thought of in terms of cost reduction, can have a dramatic positive impact on improving quality.

> **LEAN AND QUALITY ARE NOT MUTUALLY EXCLUSIVE. IN THE TRIO OF METRICS QUALITY, COST AND DELIVERY, QUALITY IS FIRST IN A LEAN ENVIRONMENT.**

Systematic waste elimination is a cornerstone of lean systems thinking.

Unfortunately, waste elimination is typically viewed as an opportunity to improve efficiency versus the equally important measure of effectiveness. A relentless focus on eliminating waste will have a profound effect on the quality of the service or product you provide. Just examine the seven wastes categories and their impact on quality:

• Inventory – Excess inventory ~ either in finished goods or work-in-process ~delays the detection of defects and, in fact, fosters the storage of undetected defects. Often the quality problem is not found until the product reaches the customer. Then you have to go back

The 5 E's of Lean Change

Whether you are considering how to engage your employees in an entire lean transformation, or simply trying to make one, simple change, the 5E's of Lean Transformation will keep you out of trouble.

Too often when we make a change, we underestimate how important it is to en-

gage folks in the right way. There is a process to change – we can't simply toss up a few good ideas and they take form as they fall to the ground. Having been educated as an engineer, I have had my own experiences of believing that everyone will do a certain activity because it is "logical."
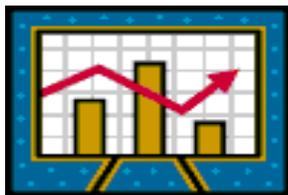
The 5E's of transformation are simple, but understanding their importance is uncommon.

1. Enlightenment – Enlightenment is showing someone WHY a particular change or transformation is being made. This may be "why lean transformation?" or something smaller such

Quality and Waste, Continued from Page 1

through your inventory to detect where the defect originated, weeks or even months after the defect first occurred.

• Over-processing – By following tighter specifications or by simply providing more than a customer wants in order to satisfy form, fit and function ultimately adds more complexity and more variation to a process, both of which lead to more chances for error.

• Over-production – Providing a product or service before or in a greater quantity than the customer requires prohibits early detection of a defect and subsequently embeds the defect in every product until detected.

• Motion – There is a simple rule of thumb that applies here. "You can't make as many mistakes in 10 handoffs as you can in 100 handoffs." In every handoff, in every move, there is another chance for a mistake to occur.

• Transportation – See Motion.

• Waiting – The longer it takes to detect a defect, the more likely it is that it will be repeated. Problem identification needs to be as close to the point of activity as possible. Not finding out about a problem until a customer

files a warranty claim is a long time to wait before knowing there is a problem.

• Defects – Even quality has its own waste category.

And, just what is the cost of systematic waste elimination in order to improve quality? Nothing. It's free when properly planned and implemented. Additionally, the cost of poor quality is frequently underestimated. Often the cost is hidden in overhead or absorbed in indirect costs without recognizing the true cost of its impact.

Now, don't get me wrong. There is an investment. It will be an investment of dollars and human resources. The difference is that cost is an expenditure of resources whose benefits decrease over time. With investment, the situation is easily reversed.

So, there is a necessary investment in developing a common lens and language for waste in order that the entire organization—and I mean *everyone*—can identify opportunities to eliminate waste everyday. Seldom does the initial investment have any negative short-term financial impact, while in the

long term, there is a substantial increase in benefits that continually multiplies over time.

My words of advice are "Don't start a quality program. Start a quality culture." Develop a shared set of mental models that focus on waste elimination to improve quality. Figuring out what you want to do to improve quality is easy. It's harder to figure out how. But, the rewards are well worth the effort...improved quality, lower cost, competitive advantages, exceptional ROI, and much more.

Some of you may think that you are already pretty good at eliminating waste, and you probably are. Why the relentless pursuit of waste elimination? Because good is not good enough. As Jim Collins says in his book *Good to Great*, "good is the enemy of great." To stand above the crowd, to stay competitive, and to stay profitable, you must pursue greatness.

by Andy Carlino

Quick Tip—Visual Management

To aid managers in how they manage from charts and graphs, make "good" on all graphs point in the same direction. Whether you invert the number or just reverse the order of numbers on the axis, good is always up. Then everyone can spot problems IMMEDIATELY without having to spend time interpreting what they see.

The 5 E's Continued from Page 1

as "why is a process better this way than that?"

2. Education – Education is generating the understanding of WHAT is being done and HOW to do it.

3. Empowerment – Empowerment is giving someone a CHANGE to do it. This is more than simply allowing them to do it, it means giving them a process, structure or method to do it.

4. Execution – Execution is the actual application, it is where people are applying what they learned or know and get the results of the application, whether an improvement or a lean transformation.

5. Enrichment – Enrichment is enjoying the results of what was done, which includes both the benefits derived from the results but also the benefits from the learning and reflection from the experience.

By not using this framework to understand lean transformation, it is very easy to make critical mistakes in its implementation. Enrichment is often skipped because we simply don't think of it or we think that if people understand the what and how, the why will be self-explanatory. The why is a critical understanding for several reasons. First, if people are asked to make up

their own "why," they are likely to make up a skeptical or untrusting one, particularly if they have been given reason to do so in the past. If they create why's under this context, not only will they not commit and follow through on lean transformation, but they are likely to fight you on it and even sabotage the efforts. When you see this reaction, it will be easy to place the blame on them, but it is leadership's fault for not providing enlightenment. The second reason enlightenment is so important is that when faced with problems or constraints, employees will not be able to find new ways through them if they don't understand the ultimate end.

Others companies skip not just enlightenment but also education. These companies go to their employees as say "we want your ideas to help improve the company." Then when the employees give ideas, the response is "these were the wrong ideas – they weren't what we were looking for." Of course, that's the employee's fault we think, but how can it be if we didn't provide for them the why, what and how. Another example are the companies that put people into teams but do not provide them the skills to act as teams, resulting in the conclusion that "teams don't work." Skipping both enlightenment and education is perhaps more rare, but the consequences are disastrous.

Another critical element is skipping empowerment. Empowerment is not just giving PERMISSION to people to go do something – it is much more than that. Empowerment is giving people a structure or process to engage in to make change happen. One Fortune 10 company trained all of their hourly employees in lean manufacturing techniques. They then sat back and waited for the magic to happen. Unfortunately, those who were trained were still on the front line doing their jobs – they had no structure to engage with. Managers want to think by not getting in the employees way, they are empowering them. This is clearly not far enough. Whether the method of empowerment is through kaizen workshops, suggestion systems, team structures or something else, it must meet employees where they are and bring them into their opportunity to apply what they have learned.

The 5E's – Enlightenment, Education, Empowerment, Execution and Enrichment – can provide a powerful lens on your lean transformation efforts. Use them to avoid failures by learning from those who have. Follow through on every step and don't think you've found a shortcut that all the others have missed. There are no shortcuts.

By Jamie Flinchbaugh

Lean Learning Center

"IF WE DID ALL THE THINGS WE WERE CAPABLE OF DOING, WE WOULD LITERALLY ASTOUND OURSELVES."
Thomas edison
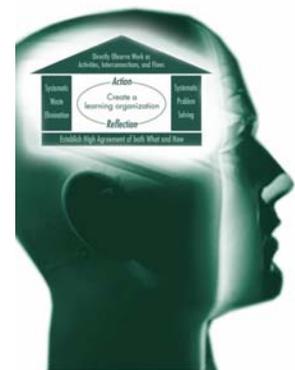
People must experience lean in order to get true culture change

Know All Dimensions of Your Operating System

A version of this article recently appeared in the Factory Logic newsletter Leading Lean. *(www.factorylogic.com)*

It has happened to all of us. Despite perfectly laid plans for a project and high confidence of success, we are met unceremoniously with unexplained failure. We may try again, we may just cut our losses and move on, or we may point blame towards mystic forces. Let's turn our sights instead towards what we can learn from these experiences.

At work is the force of your Operating System. This has nothing to do with Bill Gates and it is not something you can see or touch. The Operating System is the interplay between the many dimensions of how your business works. It is an invisible set of relationships across four dimensions: thinking or people, systems, tools and skills, and evaluation. The thinking dimension covers the principles and beliefs of the organization; it is the individual differences and the collective culture. The systems are how material and information flows, how processes work, how activities are performed; it is how work is designed. Tools and skills are the collective capability to manage, solve problems, make decisions and make improvements. Evaluation is how we know where we are, how we are doing; it includes our measurement systems but also goes well beyond that. We all have these dimensions in our work. It is

how we design, manage, and improve them that counts.

There are two vital lessons that we must internalize about Operating Systems. They are important to internalize because dealing with your Operating System is not a one time gig. It is ever present and must be considered and dealt with at every decision you make. Lesson number one is that every change made to one dimension may require a change to another. You may change an information system which may require new tools or skills or you may adopt a new problem solving tool that requires a change in thinking. Consider the simple yet powerful PDCA, or Plan – Do – Check – Act, loop. Planning for any change will require us to look at all four dimensions no matter which dimension is primarily being changed.

The Check element is equally affected: did our change in one dimension cause unintended side-affects in another requiring intervention?

Lesson number two is that the four dimensions of your Operating System must be consistent and aligned. They must work together. This isn't just about being good or bad, effective or ineffective. The same culture that is high-performance in one Operating System may be low-performance in another if it is inconsistent with the other three dimensions. This explains the lack of success of most benchmarking efforts; they must focus

The operating System framework provides a litmus test for everyone to use. It allows individuals to ask "Is what I'm planning being done in a way consistent with where the organization is going?

on one dimension at a time. The most storied example is perhaps General Motors efforts to import the Toyota Production System, an Operating System unto itself, through its joint venture

"An Operating System is an invisible set of relationships."

Jamie Flinchbaugh

Lean Principles form the core of an effective Operating System

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Puzzling Lean

What lean term or tool does this image represent? Submit your answers to puzzle@leanlearningcenter.com along with a story about a success you've had with lean and your name will be entered in a drawing for 50 copies of our Lean Cheat Cards (a $50 value) which provide a handy reminder of the Lean Rules and Principles. Your story will also appear in the next issue of Lean Progress.

Operating Systems Continued from Page 4

with Toyota, Freemont, California based NUMMI. Most efforts focused on the most tangible elements, including systems and tools. Much harder to see and import were the intangible elements such as principles. When tools were brought from NUMMI to GM they were rejected, like a body rejecting a virus, because they were inconsistent with their existing Operating System. All four dimensions must move together, like four members of a quartet must be on the same page.

 An example of not heeding these lessons was seen during a recent trip to an aerospace manufacturer. This company had worked for over a decade on understanding and applying lean concepts. Because of the hard manufacturing processes involved in this industry, this company's lean efforts had focused largely on creating small, efficient u-shaped work cells. One cell was particularly well designed. It was designed to takt time and was so tightly packed that the operator didn't even have to take a step, he just shuffled his feet. It was connected by a replenishment signal to its customer. One thing, very subtle, was wrong. The operator had created mini 3-5 part queues in between each of his machines. When questioned, the opera-tor's response was, "sometimes a machine will fail to cycle so I still have a part to use". He, and obviously those around him including management, had failed to get their thinking right about the process. They had implemented only half an Operating System – their job was not done.

 Don't be afraid to benchmark from anyone, adopt new technology or make a change, but be sure to keep on your lens of the four dimensions of the Operating System.

By Jamie Flinchbaugh