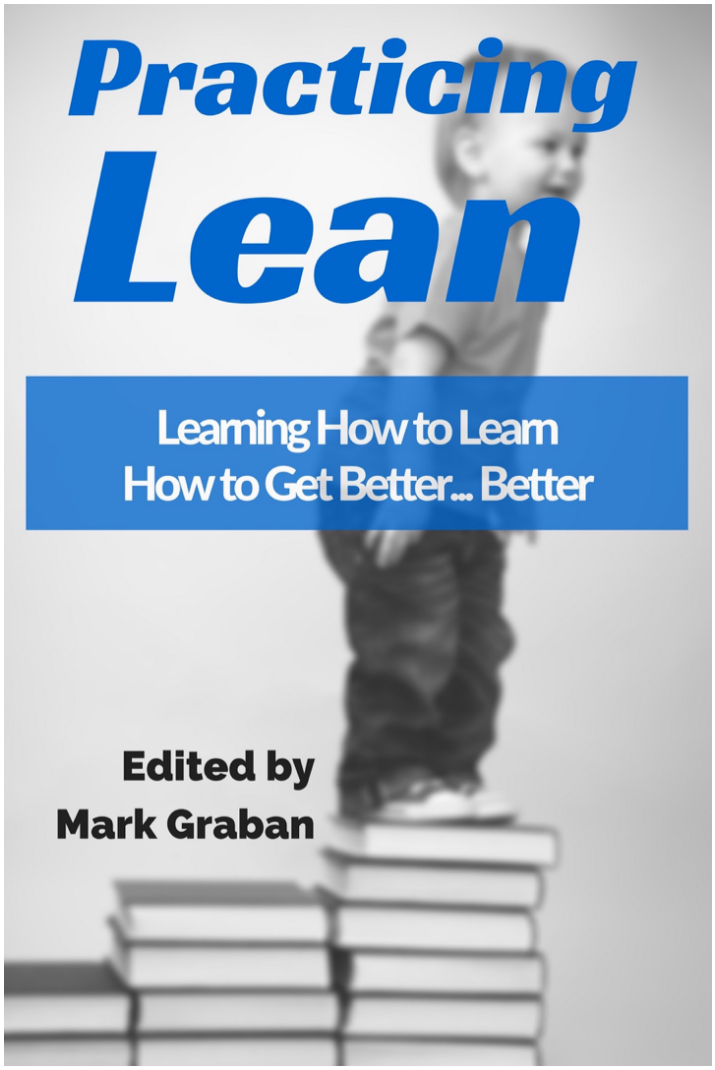
An excerpt from the book *Practicing Lean*



Chapter 17 by Lesa Nichols

To Purchase the entire book, please visit www.PracticingLean.com

100% of proceeds are being donated to the non-profit
Louise H. Batz Patient Safety Foundation

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Welcome to the Book!

This book is a collaborative project that has been taking shape over time, with different authors contributing chapters and essays about the early days of their Lean journeys. That includes people with experiences in Lean manufacturing, Lean healthcare, Lean Startups, and other settings.

As the editor, I wrote Chapters 1 and 2 as a way to inspire others to share their stories and their honest reflections about their own personal Lean journeys. As the subtitle says, this is all about "Learning How to Learn How to get Better, Better." How have we learned about Lean through our own practice? Have we gotten better at how we help others get better? This is a book of those stories and reflections.

I asked people to contribute chapters that are first-person stories, with the emphasis on mistakes and honest reflections, not a chapter about how great they are with Lean.

This book evolved over the course of a year, with submissions being added to the electronic book through the LeanPub.com[1] platform. Those who bought the book early received updates as chapters were added over time.

Now, as of December 2016, the book has been released as a Kindle eBook and a paperback book.

I'm really excited that this book now contains chapters by 14 authors from different industries (healthcare, manufacturing, services, government, and consulting) and from different countries (the U.S., England, Canada, and Scotland). Some contributors are published authors of books and some are sharing reflections for the first time in this form.

[1] http://www.leanpub.com

All author royalty proceeds are being donated to the Louise H. Batz Patient Safety Foundation[2], a Texas-based non-profit that does excellent work in educating patients and hospitals about patient safety improvement. Their publications, like the Batz Guide for Bedside Advocacy[3] are really making a difference in the lives of patients and staff. Over $1000 has been donated, as of December 2016.

If you'd like to donate, please visit their website[4].

Thank you for reading! If you reflections you'd like to share, please email Mark@MarkGraban.com

Mark Graban[5]

July 29, 2015 Updated December 20, 2016

[2] http://www.louisebatz.org/Home.aspx
[3] http://www.louisebatz.org/patient-education/the-batz-guide.aspx
[4] http://www.louisebatz.org/
[5] http://www.MarkGraban.com

Chapter Seventeen – Lesa Nichols

Bio: Lesa Nichols has spent over two decades guiding organizations to improved performance by applying the principles of the Toyota Production System (TPS) and Lean.

As a key leader for Toyota North America, she led teams to analyze and solve the toughest operational problems within Toyota, including the preparation and launch of new vehicles, plants and production methods. After leaving Toyota, Lesa spent four years helping clients of the Greater Boston Manufacturing Partnership (GBMP) to achieve successful enterprise level improvements.

In 2013, Lesa created her own firm, Lesa Nichols Consulting (LNC). Currently, she and her team help companies understand how and why to utilize principles of TPS and Lean as a competitive operations management system.

Lesa lives in Louisville and can be found at Lesanicholsconsulting.com[104] as well as LinkedIn[105].

[104] http://Lesanicholsconsulting.com

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I heard a quote early on in my career with Toyota that goes something like this:

> "Within 3 days, people think they can talk about Standardized Work,
>
> Within 3 months, people think they can teach Standardized Work,
>
> Within 3 years, people realize they know nothing about Standardized Work"

This has certainly been my personal experience.

Just like any journey to acquire a skill, there are the high highs and the low lows. Graduating from high school, I thought I had conquered the world and the path ahead in college would be more of the same. Until I realized that I was a lowly freshman. Stunned at how quickly I realized how little I actually knew, it was hard to keep the shock factor in check. But I did. It became a lot easier with the recognition that everyone around me was having a similar experience. This pattern has continued throughout my career.

In the interest of sharing lessons learned, here is a bit about my journey and the major stages of discovery, along with some painful, but formative, learning experiences.

1. Beware the documents – see the work

All I could see in my early days of my experience with Standardized Work was a bunch of documents. Capacity sheet, Combination Table, Chart, Time observation sheet, blah, blah, blah. For me, they were merely something you had to get through to work with the more glamorous tools of the Toyota Production System (TPS) i.e. jidoka, continuous flow, and kanban. Of course, I wasn't able to see

how one concept fit to another and why Standardized Work always came first.

While I was with the Toyota Supplier Support Center (TSSC), I was part of a small team assigned to improve the productivity of a work cell. It took about 10 minutes of observation to feel a high level of frustration from operators, and yet we proceeded to document the current condition standardized work. I felt I was wasting time working on paper and couldn't see how standardized work analysis could possibly help the operators have a less frustrating day.

My mentor, who was leading the improvement strategy at this plant, saw that I, along with the rest of the team, had become too caught up in details of how to do time studies and fill in the documents. He called a halt. He explained, "You are not seeing the true condition. You are lost in the documents."

He redirected us to the line. We gathered around him while he intently looked each of us in the eyes and instructed, "Watch the movement of each team member's eyes as closely as I am watching yours. Then, you will see the truth of the process trouble." My eyes apparently were saying to him, "What the heck are you talking about?" which was exactly what I was thinking. I was not alone. He patiently explained, "The eyes are mirrors of our thoughts and concerns. When people are intently doing their work, they are not hiding anything. Please discover this on your own." Off we went.

With this newly focused lens, the team could see the furrowed brows, and the squinting and darting of the operators' eyes. Our connection with the operators evolved quickly as we tried to pinpoint the reasons behind a variety of facial expressions.

In my case, I was observing an operator who appeared to be struggling with a bright light shining in her eyes while attempting to assemble a part. When I went to confirm this with her, she said, "Oh no, come here and try this." I went to her spot on the line, stepped into her position, and was able to really see what she was seeing. Or in this case, what she wasn't seeing. The light was not

shining in her eyes, but in fact, she was working with an obstructed view of the area where she needed to attach two components to the main unit. She was attaching parts by feel, which explained the continuous darting and squinting of her eyes.

The other members of the team were having similar experiences. In taking this "eyes of the operator" approach, we were able to find and fix the specific struggles in each person's work. As we knocked these issues off, productivity improved.

This experience revealed an astonishing approach to Standardized Work. Without the barrier of a stopwatch, documents and clipboards, it is much easier to deeply observe the work the team member is doing.

Ultimately though, without transferring our experiments and learning into SW documents, there is nothing for worksite leaders to ensure those improvements will continue.

2. Standardized Work documents are THE WAY to lead to improvement – but only if they change

Rather than getting in the way of how we observe conditions, SW documents are intended to show us the way to:

- Hone in on the most important problems to attack
- Provide a gauge to measure the impact of improvement
- Pinpoint specific elements of a process that are causing trouble

I've had many opportunities over the years to use SW documents as a guide for successful improvement. Many times, it has gone well and then there are the other times that were off the mark,

creating terrific but painful learning conditions. One of my worst improvement attempts turned into a lifelong learning experience for me and two fellow coaches.

The assignment was to develop the skill of five new leaders of Standardized Work for Toyota plants in North America. In this case, we needed to transfer the key technical factors of SW including takt time, work sequence, and standard in-process stock. A Toyota supplier was interested to be our training ground as they were struggling to achieve consistent output in an area of their plant.

My fellow coaches and I needed to vet the worksite to see if Standardized Work was truly what they needed to improve operations. As we went about our pre-training investigation, we gathered the following:

- Customer demand was amazingly consistent so we could easily establish takt time (pace of customer demand). This would give us the target line we needed to judge whether process cycle times (time for each person to start and finish their work on one component) were a problem or not.
- Each of the team members in the area had the skill to keep a repeating sequence of assembly operation.
- Once established, the concept of standard-in-process stock would be helpful for the team members to stay in their work rhythm/sequence.
- There were many chances for our trainees to try out improvements aimed at creating smooth, repeatable work.

From the view of our coaching team, this area fit the bill despite some concerns we had with equipment complexity, isolation of the worksite (the only clean room in the entire plant), and having no designated person in the area to lead the quick troubleshooting needed.

Using the SW capacity analysis sheet, SW work combination table, SW chart, and a line balance graph, we could see improvements that would allow the team members to achieve the customer demand. We thought we were good to go.

Three weeks later, as we gathered the team members with our group for the actual kickoff, things had changed:

- Customer demand had spiked due to an annual event of building products ahead of the holidays to cover customers' sales during a week-long factory shutdown. This meant a new, temporary takt time was needed.
- The equipment complexity had become an obvious problem with the additional volume. The capacity analysis we had completed now showed a bottleneck on one of the most complex machines.
- Quality problems had increased due to people focusing on making the higher demand levels while dealing with frustrations of frequent equipment disruptions.

For me and my fellow coaches, this appeared to be a nightmare. We quickly confirmed our suspicions by calculating the gap between the number of products needed and their actual output of good parts. Only 60% of the time available in each shift was actually spent making products the customer had already purchased. Yikes! This was no longer a great time to develop SW coaches. What was needed was deep, technical problem solving.

Abandoning ship was not an option. We regrouped to focus on ensuring the stability of each process so that we could at least make a smooth work sequence. You can probably imagine how hard this was to achieve. We soon had frustrated trainees in addition to frustrated team members.

The good news is that some improvement was made. The bad news was that many quality problems and machine malfunctions continued.

As we reported out to the factory's upper management as well as our TSSC bosses, the questions were tough but the learning was deep. Looking back, this experience was quite formative for me.

My key takeaways:

- The shop floor is alive! Things change all the time. Given that, SW documents will only show the correct path to improvement if they represent the current situation. We, as coaches, should have re-confirmed the real situation of the worksite immediately before our work was to start.
- Learn to imagine the conditions you will face at the time you are planning to act. This leads to better discovery in the planning stage and allows you to prepare for any obstacles you find.
- When you have a concern about barriers that could get in the way, investigate. In this case, we could have gathered facts on machine specific downtime, response time to calls for help with machine disruptions and facts to show us the most important quality issues. Armed with this real-world intelligence, it would not have been a problem to have a maintenance person assigned to our team and a quality person available as a go-to resource.

3. Even the best SW Documents aren't enough

On the heels of experiences like those shared so far, I concluded the only way to understand the "behind the scenes" factors making highly effective, sustainable improvement hard to achieve was to gain real-world operations experience. I broached the topic of a rotation into a production role with my boss/mentor at Toyota. He agreed, but teasingly pointed out that we first needed a brave plant president willing to take on an "operations rookie."

Nine months later, I held the position of Production Manager in one of Toyota's Powertrain plants. The assignment for me was clear from Day One:

First Year: Learn the current condition of operations, including the interdependencies of all functions under one roof, lead cross-functional problem solving to raise current performance in Safety/Ergonomics, Quality, Productivity, On Time Delivery, and Cost.

Second Year: Lead the area to launch a major product change, designing out the problems found in the original "current condition." This involved significant change to the way components were machined, assembled, and conveyed.

Third Year: In the aftermath of model change, stabilize the new work methods and kaizen to raise Safety, Quality, Productivity, On Time Delivery and Cost – yet again.

My original intention was more than met – to understand the real-world issues that make sustainable improvement hard. I still feel that experience was worth five times more than my college degrees. Going in, I had a strong theoretical understanding of the Toyota Production System. What I came away with was an understanding of the connections between the theory and practical application.

These years were tough, yet exhilarating. Many times, I laughed when I thought of my theoretical understanding of TPS with its aim of balancing Quality, Productivity, Lead Time, and Cost. In my daily life, it felt like those aims were in a blender that had somehow gotten stuck on the "Liquefy" setting — with me right in the mix.

Summarizing the SW lessons learned from this period is hard, but here is my Top 5 list:

First: The amount of energy required just to make quality products, safely, day after day, is incalculable. Time to work on deep problem solving and intensive improvement activities is hard to find. It took every ounce of my creative, strategic strengths to continuously carve this time out for the organization.

Second: If there isn't any human motion involved, there is no meaning to creating SW. Rather than Standardized Work, there are Operations Standards that clarify expectations of the equipment. These are invaluable decision making aids for the people running, fixing and maintaining the machines.

Third: SW is the bridge to practically connect the team member making the product to the customer using the product. There are many ways this happens, including:

Takt: Takt time is truly a great balancer of work. When people have a disagreement about how work is distributed across processes, it is often a losing battle. One supervisor says it is fair, another disagrees. This can go on endlessly.

Because takt time is based on actual customer sales, it removes the element of "supervisors' whim" and focuses the discussion. Actually, it changes the communication from a debate to a problem-solving activity.

Work Sequence: While there are many factors to consider in developing the best work sequence for each process, the guiding light comes from the people who designed the product for the customer. Any important design factors that a team member can influence are captured in the SW. A familiar example of this is a specified sequence of assembly to avoid interference between components.

Job Breakdown Sheets: These are critical to help each team member understand the importance of each individual work element they perform. When team members know the critical quality aspects in their job and the specifics of why they are important, the nature of training changes. We begin to shift from telling people what to do, to answering their curious questions about how things work and why.

Job Instruction Training, Standard in Process Stock, and the list goes on. Really.

Fourth: SW is not just for assembly. Although it definitely looks different in machining, casting, painting, etc., the guiding principles of SW can be applied in processes that people typically think of as "craftsman" jobs. Many of the well-known tools of SW are not the same, but the concepts of takt time, work sequence, standard-in-process stock, and others apply, bringing the same benefits that SW does to assembly work.

Fifth: SW is an emotional thing. People feel strongly about the way they want to do their work. They have intense opinions about their own techniques. Some people want to have the loosest of structure identified, while others believe the movement of each finger should be clarified. To get on the same page from one team member to the next, one shift to another can be a messy process.

As difficult as this sounds, TPS is a brilliant system. People may disagree with this and that, but we are always pulling back to the same things: takt time is given by the customer (no debate), what is the best practice sequence of the process given the competing factors of quality, safety, ergonomics and productivity, what is going on to cause the cycle time change from one hour to the next… I would much rather spend time managing these issues than the general world of human drama.

At the end of my job rotation in Powertrain, I developed a summary of my experience as a production manager and how I would use this to shape my future direction. In preparing the summary, I got input from several of my peers, shop floor leaders and mentors. The big discovery was how much I had learned about SW as an operations management system, not only for improvement projects.

This recognition was illuminated one night about a week before I left Powertrain to rotate back to Toyota's North American Toyota Production System group. Mr. Ano, one of the most valued mentors of my life, pulled a chair up to my desk and sat looking at me intently, with a slight smile, but serious eyes. This was a man that intimidated many without meaning to. As a veteran Powertrain

leader in Japan, and now the US, he carried vast knowledge.

To me, he was a tough, but fair, leader and a mentor I respected beyond business. He was my coach of human nature and the one who gave me confidence to bring my real, unvarnished self into the work place.

I was all ears as he said, "You are such a lucky person. So many mistakes and challenges you have had. No one can pay for this experience." A bit disappointed with the perceived dig, I asked, "What are you worried about? That I won't carry my learning into my next job(s)?"

His eyes lit up and he replied, "This is why you are a strong manager. You read behind the words and want to hear the real truth. My request to you is to take every painful experience from here and apply it in your new life. Please give all your effort to the real world struggles of man (human) management.

Do not be surprised when you leave. Everyone will ask you to focus on productivity again. You have learned through these tough days, that when you fix the safety and quality struggles of the team member, productivity comes."

As he walked away, it hit me that Standardized Work would be the main mechanism to guide me from my Production Manager life to my TPS Manager one.

And it did.

Thanks for Reading the Book!

I hope this book has been interesting, helping, or entertaining. Or maybe all of the above. Thanks for taking the time to make it this far.

Please consider leaving a review on Amazon.com[161].

Again, all author royalty proceeds are being donated to the Louise H. Batz Patient Safety Foundation[162], a Texas-based non-profit that does excellent work in educating patients and hospitals about patient safety improvement. Their publications, like the Batz Guide for Bedside Advocacy[163] are really making a difference in the lives of patients and staff.

Over $1000 has been donated from sales of this book, as of December 2016.

If you would d like to donate, please visit their website[164].

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