Sustain Your Gain

Keys to Sustaining and Improving Your Lean Implementation Results

OpEx

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Lean Transformation
Consulting • Coaching • Training

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Sustain Your Gain

Foreword

Throughout my career as a lean practitioner, consultant, project leader, and manager, I've had the opportunity to lead, observe, and participate in a great many lean rollout activities. Without fail, they start out with highly energized, motivated teams, and an almost overwhelming flow of improvement ideas. Under the guidance of experts, the participants learn and apply proven, world class lean methods such as standardized work, 5S, pull systems, and so on to help them find and eliminate waste in their processes. After all the applicable methods are rolled out during these events or activities, the participants can normally demonstrate significant improvements in quality, lead time, and efficiency to their leadership. The activity is declared a success.

If we fast forward 6 months from the end of the activity, far too often the results of the activity have all but disappeared. The physical layout changes and other equipment moves may still be in place, but the workers no longer follow the standard work that was developed, 5S has been virtually abandoned, and inventory quantities have crept back up to near pre-activity levels. Most distressing of all, at least in my view, the workers are asking, 'When are we going to have another event? I've got some great ideas I'd like to try out.'

On the other hand, there are cases where the results are not only sustained, they're improved upon. After the initial activity, improvement ideas continue to flow, the organization continues to seek out waste and solve problems, and performance in key indicators steadily gets better.

What's the difference? The difference lies in the realization that specific lean rollout events or activities are only part of a true lean transformation. When an organization desires to reach a level of excellence on par with the top lean performers in the world, they realize that work methods, management systems, expectations of the workforce, and mindsets have to be changed in order to build a business environment, a culture, that seeks out and attacks problems and waste every day. Their lean rollout activities focus just as much on transforming the mindset and behaviors of the organization as they do in applying the time-honored process improvement methods such as standardized work, 5S, pull systems, and so on.

In this short book, I present four key principles that operationally excellent lean organizations use to make continuous improvement an everyday activity and to sustain the gains that come from the ideas of everyone in the organization. The focus here is not so much on how to make improvements - it's assumed the reader is at least familiar with the lean methods used to eliminate waste and improve performance - but more on how to make the improvements sustainable. These four key principles, when applied diligently and supported from all levels, provide a great foundation to build the methods and mindset that drive a true continuous improvement-based organization.

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You're off on Your Lean Journey

So, you've done it...you've started your lean journey, you've had a few events or activities at the workplace, and you've seen some great results. Quality has improved, you're achieving the best delivery performance in years, productivity is significantly better, and through all of this employee morale is through the roof. Your events and activities have been successful and you're convinced that lean manufacturing has to be at the core of your process improvement strategy. You've learned some time-honored lean tools and methods by applying them in the workplace. You want to take what's been learned and accomplished and make it a way of life in your business.

So what's next?

Though you may not be aware of it, you've reached a critical point on your lean journey. Here's where you ask yourself the question, 'How do we sustain or even improve on what we've accomplished in our lean rollout activities?' Kaizen events and other lean rollout activities are good learning tools and excellent ways to get quick wins, but all too often the participants and their leaders revert back to pre-event thinking soon after the event wraps up. At this point on your journey, it's time to explore the lean methods, tools, and behaviors that drive sustaining and continually improving upon the results you achieved in your rollout activities. It's time to explore what it takes to turn a lean rollout into a lean transformation.

Four Keys to Sustaining Your Gain

One of the lessons learned from a well-ran kaizen event or lean rollout activity is that the people who perform the process - those who add value to the product or service you produce - can make significant contributions to the overall performance of the business. They have ideas to eliminate waste, to make the workplace safer, and to improve quality and productivity, and are most content when they have the opportunity to share those ideas and get them implemented. During the event, they work alongside supervisors, maintenance people, engineers, and so on to solve problems, often by making the changes to the process during the event and seeing the results almost instantly. If you haven't already, ask yourself these questions: 'Why doesn't this happen every day? Why do we need a special event for people to collaborate, contribute, and improve their processes?'

Truly excellent companies - the 'lean icons' - have systems and behaviors in place that facilitate daily continuous improvement activities, and those systems and behaviors require everyone to contribute ideas and to collaborate on solving problems. These systems and behaviors can be broken down into specific methods that can be implemented in your workplaces in a reasonable amount of time:

- ***The Gemba (at the workplace) Support Organization*** - The right structure with the personnel who support rapid, close to the source problem solving. This includes someone who can respond immediately to help requests as well as those who can work on longer-term issues.
- ***Transparent Local Performance Measures and Problem Solving*** - Direct workplace measurements, recorded by the workers at the workplace, against established targets. These targets are shared within the Gemba Support Organization and drive the collaborative problem solving efforts.
- ***Visual Management and Process Control*** - Current best practices at the worksite are clearly and visually documented and audited by those who perform the process. Here's where many of the lean tools and methods come into play, such as Standardized Work, 5S, and Kanban, as they make problem identification simple and virtually instantaneous.
- ***Gemba Leadership*** - Leaders at all levels regularly visit the worksite to observe performance, problem solving, and improvement activities. They use the opportunity to give positive feedback as well as to learn how to improve the speed and quality of problem solving and process improvement.

Again, these methods can be implemented in your worksite fairly quickly, but that's only a first step. For most organizations, practicing these methods calls for a significant change in behavior - most organizations are not so transparent, don't spend quality time at gemba, and aren't set up to collaborate with workplace personnel to solve problems. These behaviors have to be developed as part of your lean transformation; in order to sustain and improve performance, they must be just as much a part of your transformation plan as Standardized Work and 5S.

The Gemba Support Organization

Analyzing processes, identifying waste, eliminating it, and rebalancing the processes according to takt time (the rate of customer demand) is a classic application of Standardized Work. Standardized Work is typically one of the first methods applied in a lean rollout, along with 5S. The idea behind it is that a new, more efficient, more quality-oriented process will be developed, posted at the workshop, and always followed. The basic hypothesis is 'If we always follow the documented standardized work, we will always produce a quality product / service according to the takt time.' Since a great deal of waste was eliminated during the development of the standardized work, efficiency and quality were improved - a true gain for the organization.

What happens when something keeps the worker from meeting the takt time or from performing the process as it's documented? Here's where the rubber meets the road; how you answer this question determines how well you can sustain and improve what you've gained from your lean efforts. In so many lean rollouts, this question is left unanswered - the workers who perform the processes are left to fend for themselves. They're left with little choice but to develop inefficient 'workarounds' to deal with the

problems, and when they do they're no longer following standardized work. The gains in productivity and quality begin to decay and, over time, can be completely lost.

Think back to the question, 'What happens when something keeps the worker from meeting the takt time or from performing the process as it's documented?' Certainly, something that keeps an worker from completing standardized work in the proper sequence, to the quality criteria, or within takt time is a problem - a deviation from standard. Now, apply the lean principle 'problems are solved close to source in space and time'. Designing the Gemba Support Organization begins by answering our original question: When an worker encounters a problem - something that keeps him or her from performing standardized work - he or she must communicate that problem immediately, and someone must be available to respond immediately. That person, that first responder, is known as the *team leader / problem helper.* So, the first step in designing the Gemba Support Organization is to assure that the workers know they are responsible to call for assistance when they encounter a problem, and that someone is available to immediately respond to the request:
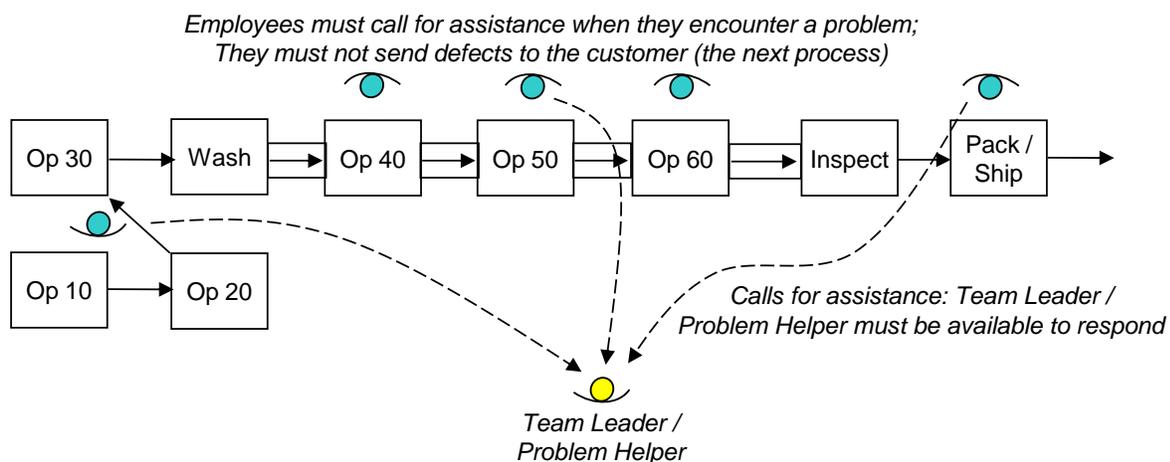
Fig. 1: The team leader / problem helper must be available at the worksite to respond to calls when the workers detect abnormalities or can't complete standardized work.

When the team leader / problem helper responds to a call for assistance, the first priority is to resolve the immediate issue and maintain the flow of good product to the next process (the customer). But wait, there's more: The workplace teams must also work to find and eliminate the root cause of the problem, i.e., the reason the worker asked for help to begin with. Their contribution to problem solving and continuous improvement is required; they must initiate the problem solving activities for the things that keep them from performing standardized work as written, to the quality criteria, or to the takt time

Naturally, problems occur that fall outside of the problem solving capabilities or control of the workers and team leaders / problem helpers. Examples are equipment issues

requiring skilled trades, purchased components issues requiring supplier quality or design support, training issues needing supervisor intervention, or methods issues requiring engineering help. Even with more complex, longer-term problem solving activities, the principle remains: Problems are solved close the source in space and time. Considering the issues outlined previously, an additional layer of the Gemba Support Organization, the cross-functional support team, practically designs itself:

Cross-Functional Support Team meets daily to discuss performance and problem solving activity

| Op 30 | Wash | Op 40 | Op 50 | Op 60 | Inspect | Pack / Ship |

| Op 10 | Op 20 |

Team Leader / Problem Helper

Workplace Team Performance and Problem Communication

Cross-Functional Support Team (e.g., Supervisor, Quality, Maintenance, Engineering, etc.)
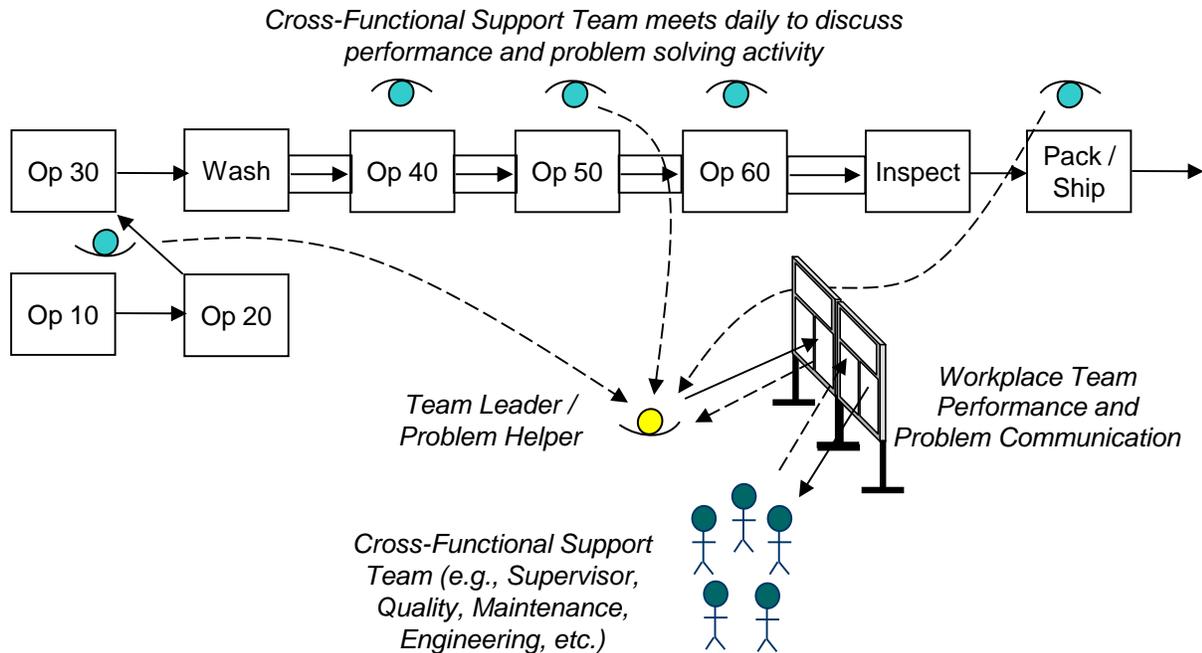
Fig. 2: The Cross-Functional Support Team communicates frequently (at least daily) with the Workplace Team. The teams share common performance targets, measured and displayed in the workplace, and they jointly plan countermeasure activities around performance issues.

The cross-functional support team supports the workplace teams by taking ownership of problems they can't solve themselves. They do this at the workplace, at gemba, in order to communicate with the workers, more clearly understand problems, and to confirm that their problem solving activities are effective. The team leader / problem helper represents the workplace team, and Gemba communications occur at least daily.

Members of the cross-functional support team are decided by the types and frequencies of problems occurring at the workplace. For example, heavily automated operations would most likely need daily interaction with maintenance personnel, while very manual operations may not require a maintenance person be part of the team. Regardless of the position or specialty of the cross-functional team member, the cross-functional team has shared, common targets that are measured daily at the workplace.

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Transparent Local Performance Measures and Problem Solving

You started your lean rollout activities for a reason: You wanted to see performance improvements at the workplace. You wanted to improve quality, shorten lead times, reduce inventory or costs, and / or improve productivity. All the while, you naturally wanted to keep safety in the foreground and see improvements in that category as well. How did you know your activities were effective? You measured their results. You knew the performance levels in quality, lead time, productivity, etc., before the lean activity, you found problems to solve and waste to eliminate, you made improvements, then you could see the results afterward; basically, your organization applied some form of A-3 Thinking, the Toyota problem solving approach. At the end of your activity, the teams of people who participated in the workplace event had the opportunity to present their results and were likely recognized for their efforts. The next key to sustaining your gain is to build a transparent, workplace driven system that makes this type of improvement cycle part of everyday business.

To make the improvement cycle a part of everyday business, i.e., to build a continuous improvement culture, performance metrics in the workplace have to be transparent to everyone. The measures that must be achieved on a daily basis must be measured frequently (at least daily) against a target, and this information is best gathered by the workplace teams. As the teams gather the information and see shortfalls in performance, they can identify why there was a shortfall; if they can address the 'why' themselves, they must; if not, they must communicate it to their cross-functional support team. Again, this drives problem solving close to the source in space and time, as well as getting contribution from everyone.
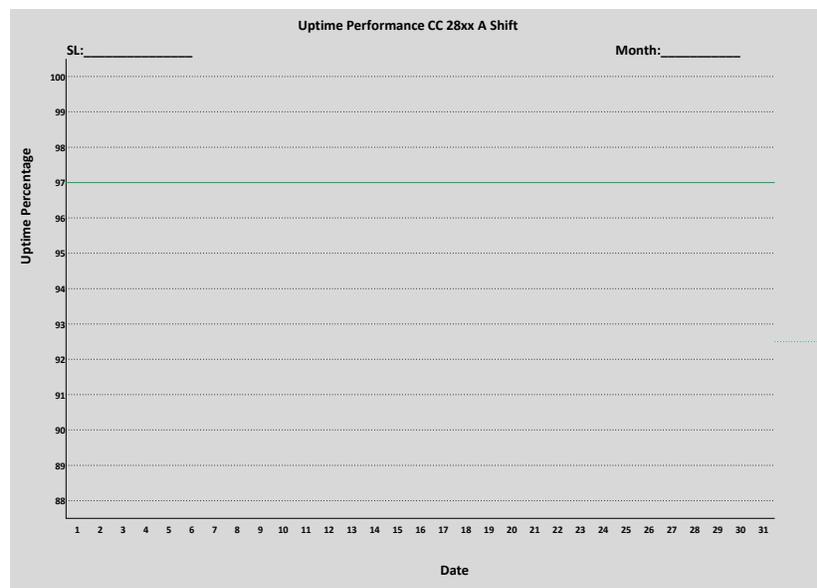

Fig. 3: A simple chart designed to track Uptime Percentage against a target. The chart is made to be completed daily by the workplace team.

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It follows that if the performance metrics are transparent and tracked by the workplace teams, then the problem solving and improvement activities should be transparent and tracked at the workplace as well. As the workplace teams identify problems that cause shortfalls in performance - the 'whys' referred to earlier - they must be documented and made transparent. Further, the proposed countermeasure, or action to eliminate the root cause of the problem, must also be documented along with the name of the person responsible to implement the countermeasure, the target date to have the countermeasure in place, and the current status. Following this process drives accountability and allows managers to understand the level of problem solving skill in the organization, to determine if the right resources are assigned to the cross-functional support team, and to step in and contribute support if necessary. These points will be covered in more detail under Gemba Leadership.

Problem / Countermeasure Tracking

Area:_____   Supervisor:_____

Date	Issue	Issue Location	Who Found	Countermeasure	Responsible	Target Date	Status
							⊕
							⊕
							⊕
							⊕
							⊕
							⊕
							⊕
							⊕
							⊕
							⊕

⊕ Issue Assigned
◑ Countermeasure Identified
◐ Countermeasure in Place, Being Confirmed
● Countermeasure Confirmed Effective

Fig. 4: A problem / countermeasure tracking tool. This information is kept on display at the workplace and is a central point of discussion during the Workplace Team / Cross-Functional Team meetings.

These performance measurement and problem solving activities must become the daily business of the Gemba Support Organization. The daily Gemba meetings with the workplace team and the cross-functional team focus on this information. They are meant to identify problems and reach a consensus on the 'who, what, where, and when' surrounding the countermeasure activities. All of this activity is posted in the workplace

so that everyone involved can see the status and make contributions to improving performance.
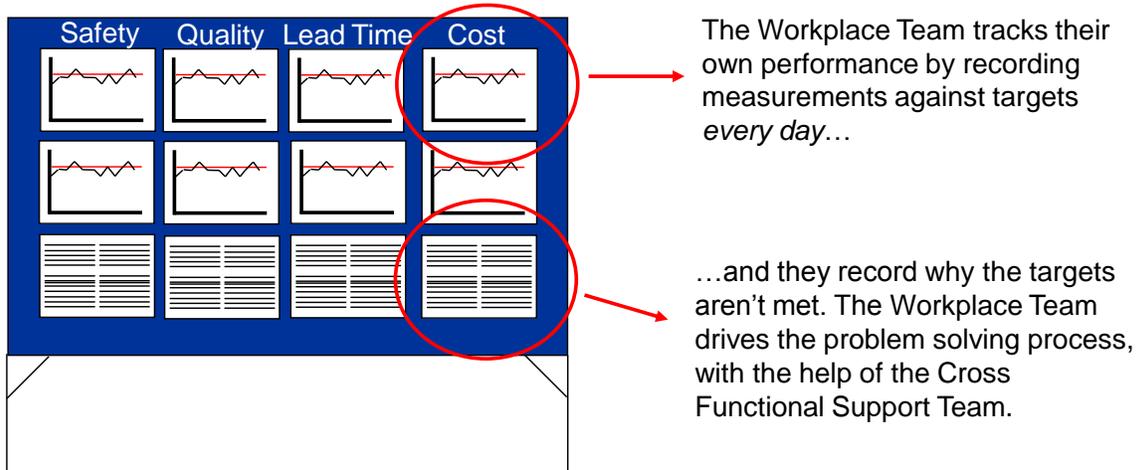

Fig. 5: The Local Measures and Problem Solving Visual Management Tool. This information is displayed in the workplace and gives at-a-glance status of performance, issues affecting performance, and problem solving / continuous improvement activities around those issues.

Transparency and openness around problems is an absolute must in a world-class continuous improvement organization. It's easy to understand, though, how people can be uncomfortable with this level of transparency - many organizations encourage, either directly or indirectly, hiding problems. Many focus first on who caused the problem, rather than why the problem occurred. As a part of your lean transformation, it's critical to change behaviors to focusing on the problem, not the person, and to develop structured, scientific problem solving skills across the entire organization.

Visual Management and Process Control

There's little doubt that you've applied at least some of the basic 'staples' of lean in your rollout activities - standardized work, 5S, kanban, some visual aids, and so on. Most of those who coach and support these activities generally have good quality tools, in the form of documents and methods, to help you see your current condition, identify opportunities, and, after eliminating waste and solving problems, lead you to a significantly improved target condition. With these new processes and procedures in place, this should be clear: *If we always follow the new processes and procedures, we'll always maintain our improved performance levels*.

This is, of course, why we strive for repeatability - to assure that we always follow a process that gives predictable, high-level results in safety, quality, productivity, and cost. Repeatability is improved by eliminating the causes of variation in a process. In lean systems, processes are developed and documented with standardized work; as alluded

to earlier, anything that causes a deviation from standardized work (variation) is defined as a problem and must be dealt with close to the source in space and time. The challenge is to build a simple visual management system that makes it easy to recognize and correct deviations in standardized work, and to be able to do that practically instantaneously.

Two fundamental lean methods that support this level of visual management are 5S and Standardized Work. In several organizations, 5S is looked at as cleanliness - 'better clean up, the boss is coming' - but it's so much more. Cleanliness is absolutely important for so many reasons; however, 5S must also be about *managing the resources necessary to efficiently perform standardized work*. Think about standardized work as a carefully orchestrated, repeatable process, synchronized to meet the takt time. How can the process repeat or meet the takt time if the resources required to do the job aren't in the pre-defined location, in the proper amount, and all unnecessary items removed from the area? To take it a step further, most work processes today must deal with multiple variants - different tasks requiring different tools and materials are processed in the same work station. The tools and materials must be differentiated in order to prevent costly errors. By now, it's obvious that 5S tools such as labeling, color coding, outlining, and so on are used to support at-a-glance process control; practically anyone can tell at any time if there are problems with the resources necessary to perform the standardized work, and the issue can be corrected immediately.
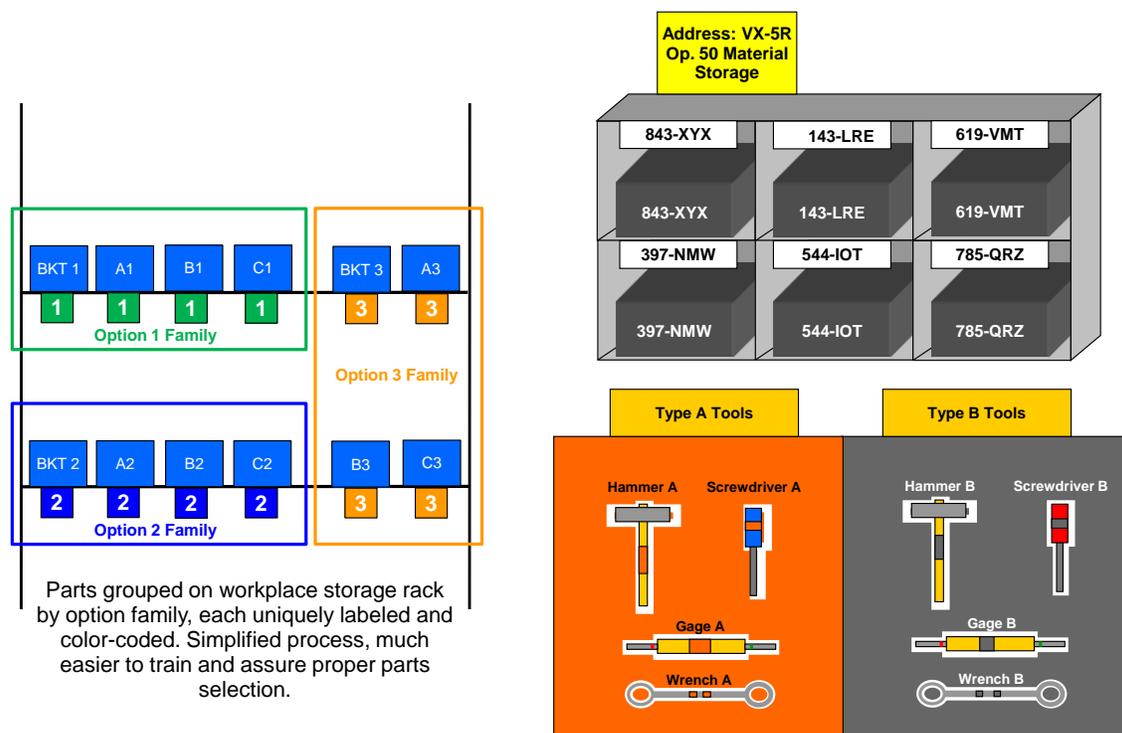

Fig. 6: Examples of visual management techniques used in 5S applications. It's easy to see if something is missing or out of place, and easy to assure the right resources are being used for a particular task.

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Having resources under control through effective 5S is a pre-requisite to standardized work, but still not an assurance that the standardized work process is being followed. There can be issues with components, tools, or other resources that prevent the worker from following the proper sequence or meeting the takt time; the worker may be experiencing some discomfort with one of the process steps; key quality points in the standardized work may be being overlooked. In order to detect and correct these types of deviations as quickly as possible, standardized work must be visually managed to the level that practically anyone can tell at any time if someone is not following the written standard.

Fig. 7: Examples of standardized work documents. When displayed in the workplace, they are used to confirm that everyone is following the current best method to perform the process. The documents also highlight any waste and improvement opportunities.

With solid visual management techniques in place for two of the fundamental lean principles, process control is a much simpler task. At a glance, it's easy to see if necessary resources are missing or if there are unnecessary items in a work station. With a few minutes observation, any deviation from standardized work can be observed and corrective measures taken. Now, with these techniques in place, it's time to establish the method used to evaluate 5S and standardized work against the documented, posted standards - standardized work for process control.

Most organizations have designated people whose job it is to perform periodic process audits. Although this is a necessary function, especially to assure compliance with various quality management system standards, this isn't enough to satisfy the 'close to the source in space and time' principle or to drive the desired level of problem solving from the workplace teams. The first level of this evaluation must be at the workplace, performed by workers themselves (usually the team leader / problem helper), and audited on a daily basis by each shift. As with any process, it must be standardized - what will be checked, when, what are the evaluation criteria - and the results must be posted. Here are some examples of audit points:

- Standardized Work Compliance
- 5S Standards Met
- TPM / Start-up Checklists Completion
- Local Performance Measures Updated
- Kanban Utilized Properly
- Etc.

The list can go on and on and, of course, must be customized to fit the specific industry. Again, when a non-conformity is found, it's documented along with the action to be taken to correct, when it will be complete, who's responsible to implement it, and the status. A word of advice: Avoid jumping to the conclusion that non-compliance in standardized work or 5S is just poor performance on the part of the worker. Although this can sometimes be the case, digging deeper for the root cause can uncover hidden issues that, when left unaddressed, will continue to plague the process

Gemba Leadership

There's a common thread running through the three keys discussed so far: They all manifest themselves at the workplace. The Gemba support organization starts with a team leader / problem helper at the workplace to provide immediate assistance, with regular (at least daily) meetings there with the cross-functional support team; the workplace teams measure and display their own performance, again at the workplace; and all the visual management and process control tools are posted at their workplace point of application. These keys, these methods and tools, drive transparency, accountability, and collaboration around the problems that affect daily target achievement in safety, quality, lead time, and cost. They make it easy for everyone to contribute and improve performance, and they give rapid feedback as to whether a countermeasure or improvement idea is effective.

If you want to build a true, self-sustaining continuous improvement environment, rolling out the tools and documents described here and assigning people to be members of the cross-functional team are not enough. You definitely have to take these steps, but more importantly, you want to develop the behaviors - the mindset - that must be in place to build that environment. You want see that the entire organization is directly seeking out and attacking the causes of performance shortfalls and finding countermeasures for them; that countermeasures and improvement ideas are rapidly implemented, tested, confirmed, and standardized; that the right people are communicating frequently about performance targets they all share; and that the members of the workplace and cross-functional team work together seamlessly, sharing mutual respect and trust.

After the charts, worksheets, display boards, training materials, and team assignments are completed and rolled out, there's really only one way to see if all of these are going to be successful - go to the workplace and see for yourself. 'Going Gemba' not only gives leaders the chance to see if the methods are being applied correctly, it also gives

the opportunity to evaluate, coach, and develop collaborative problem solving skills. Gemba leadership is not about the supervisor making a report-out of last week's results; it's about understanding the teams' abilities, assuring the correct resources are assigned to solve the problems experienced in the workplace, strengthening capabilities and learning - for the leaders as well as the teams.

Management gemba leadership visits should be a regularly scheduled activity. There should be no special preparation required; all necessary information should be available anytime. All members of the cross-functional team as well as a representative from the workplace team (the team leader / problem helper) should attend. There must be an agenda - 'standardized work' - for the gemba visit. Typical items covered in a management gemba leadership visit are:

- Performance vs. Targets, with causes of any shortfalls
- Problem and countermeasure activities around these causes
- Status of the workplace team self-evaluations and actions against nonconformities
- The status of ongoing improvement projects
- Work performance according to posted standards
- Recognition for good ideas generated by the workplace team
- Etc.

During the review of these items, effective gemba leaders coach and develop the teams through questioning for understanding. The questions are never accusatory or meant to put someone on the defensive; you can't encourage openness and objectivity around problems if people are publically called out. Questioning for understanding leads people to see their own errors and learn through self-discovery. The questions encourage the person being asked to explain their logic, how he or she came to a conclusion, why attacking a particular problem is going to give the best 'bang for the buck', and so on. This is an opportunity for the questioner, the leader, to learn as well.

Gemba visits are also an opportunity to see the effectiveness of collaborative problem solving in the organization. If there are categories where problem solving doesn't seem to be progressing like it should, are the right resources assigned to the cross-functional team? What skills need to be developed within the team? Are there financial or other constraints that are delaying the solutions? Again, the only way to learn about and address these types of problems is spending time at Gemba, looking for the details and supporting the problem solving activities of the teams.

Summary

There's no doubt that applying lean tools and methods in activities such as kaizen events can lead to significant process performance improvements. These events in and of themselves, though, aren't enough to drive an organization through a complete lean

transformation. The transformation to a true continuous improvement, learning organization requires changing mindsets and behaviors. The key methods and practices outlined in this short book are meant to facilitate these behaviors and to help leaders see how the organization is progressing in the transformation. Local measures and problem solving, visual management and process control, and the gemba support organization provide the foundation for learning, continuous improvement, and teamwork; gemba leadership guides the organization through the transformation. When you combine these four keys with your lean tool and method rollouts, when developing the continuous improvement mindset becomes just as important as scheduling your next kaizen event, you're well on your way to a sustainable lean transformation.

About Mark Tussey

Mark Tussey, founder of OpEx Leadership, LLC, has more than 23 years experience in Lean Manufacturing and Operational Excellence. After spending 10 years with Toyota, the originators of lean, he has provided services to a number of organizations, helping them achieve substantial operational improvements and international recognition. He holds a BS in Mathematics and currently lives with his family in Greenville, South Carolina. You can contact Mark at 1 (864) 551-3602 or via email at mark.tussey@opexleadership.com.