Lean, Six Sigma, and Continuous Improvement

Compiled thoughts from practitioners.

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American Kaizen

By Thomas Pyzdek

In the 1980s it was much in fashion to compare America to Japan. One of the key differences between the two nation's approaches was that Japanese were much more likely to embrace a strategy of gradual, continuous improvement. Americans more-or-less lurched forward. We would start out with a sizable lead in some area, then wait until it was clear that we'd fallen behind. At that point we would rally the troops and quickly implement a set of innovations that would once again put us in the lead. Then the cycle would repeat itself.

An example of this was Sputnik. The USSR surprised the world, including the USA, by being the first nation to put a satellite in orbit. I was only 9 at the time but I distinctly remember people in the neighborhood looking skyward with telescopes and binoculars to catch a nighttime glimpse of the small, man made orb passing overhead. It captured mankind's imagination. And it demonstrated clearly that America had fallen behind.

The American response was to dramatically increase spending in science and mathematics education, defense, and space research. President John F. Kennedy declared a national goal of landing a man on the moon and returning him safely to earth. The improvement project was on. And, of course, it worked. To be sure, the space program as well as education in math and science continued, but improvement never again reached the rates of the 1960s.

In 1986, Masaaki Imai established the Kaizen Institute to help Western companies introduce kaizen concepts, systems and tools. That same year, he published his book on Japanese management, *Kaizen: The Key to Japan's Competitive Success*. This best-selling book has since been translated into 14 languages. *Kaizen* means ongoing improvement involving everybody, without spending much money. It occupies a space between innovation and maintaining the status-quo. In an interview 11 years later Imai said "Many companies still have not fully embraced the *kaizen* concept."

Kaizen is widely used in Japanese firms. Toyota is known to use the approach to engage its entire workforce in the ongoing quest for improvement. Most of the improvements wrought by Kaizen are small, but they add up. American firms pay lip service to improvement, but they failed to embrace Kaizen for well over a decade. This lack of interest in Kaizen in America could well have been due to America's lack of interest in improvement that was "ongoing," we want things fast! Enter the "Kaizen Blitz."

Kaizen Event

The Kaizen Blitz, more commonly known as a Kaizen Event, is usually a five day affair that addresses a particular issue. The Lean Six Sigma Kaizen event usually follows the Define-Measure-Analyze-Improve-Control (DMAIC) format. The issues that are addressed are usually those identified during an initial Lean deployment to a value stream. The Lean team creates a value stream that is as lean as possible for the moment, then identifies obstacles to moving closer to one piece flow. These obstacles, such as long changeover times, quality defects, equipment limitations, etc. are targets for Kaizen Events. The Kaizen Event combines several well-known improvement approaches into one:

- *Workout*. GE's workout was designed to identify quick ways to streamline a process. The Kaizen event follows what amounts to a Lean "workout" in the sense that obvious improvements in flow have already been made. However, a first step in a Kaizen event is to list other obvious ways to improve the process. These improvement activities are made immediately or assigned to an individual or group.
- *Just-do projects*. These are improvements where it is obvious what needs to change, but it takes time and resources to make the changes.
- *Six Sigma projects*. These are improvements where the desired goals are known, but the means of accomplishing these goals are unclear. The Six Sigma skill set of a Black Belt or Green Belt is needed to link the goal (Y) to the root causes that will accomplish it (Xs) via a transfer function (Y=f(x).)

What's missing here is the original idea of Kaizen: gradual, continuous improvement. Still, I'm all for improvement any way I can get it. And in America the Kaizen event has caught on in a big way.

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Is Six Sigma the Best Process Improvement Approach?

By Joe Jenney

There are many versions of process improvement in use. Six Sigma and total quality management (TQM) are two popular versions. Kaizan is a Japanese term for continuous improvement and many organizations use this term to describe their process improvement work. Sometimes Kaizan is used to simplify processes without gathering data and some quality gurus are critical of non data driven process improvement. Another term used by manufacturing organizations is Lean. Lean is using a set of tools or methods that improves manufacturing processes by eliminating waste and errors. Some organizations combine Lean and Six Sigma into Lean Six Sigma. Whereas both Six Sigma and TQM are proven to be effective I favor TQM, or data driven Kaizen if you prefer the Japanese term. Let me give short descriptions of the two approaches and then discuss the reasons I favor TQM.

Six Sigma thoroughly trains a small number of people and then empowers these trained specialists to work with other workers and managers to improve processes throughout the enterprise. These specialists get titles according to the amount of training they have received, e.g. those with extensive training are usually called black belts or master black belts. An experienced manager is selected to manage the specialists and their process improvement activities. Other managers are given overview training so that they know what to expect and what is expected of them.

In the version of TQM that I have practiced all employees in the enterprise, workers and managers, receive about 50 hours of basic training in process improvement techniques. A very few receive additional training in special techniques and serve as a resource to all the workers and managers. After training, all workers and managers are empowered to work on process improvement of the processes they own, i.e. the processes they use in their day to day work. There is a coordinator to authorize teams and facilitate access to any data needed by the teams or to the specialists that provide analysis beyond the capabilities of the team. The authorization is necessary to prevent workers from getting involved in several teams at once and impacting productivity by spending too much time on process improvement at the expense of process execution.

Either of these approaches is effective and if your enterprise is already involved in one of these or a related approach then stick with it. If your enterprise is not yet involved in process improvement then I strongly recommend the TQM approach. The advantage of TQM is that it empowers every employee to control processes they own. This empowerment results in two benefits compared to approaches like Six Sigma that empower only a few specially trained personnel. First, empowering employees to have control over their own processes is highly motivating. It is one of the things required for employees to reach Maslow's highest level of needs fulfillment, i.e. self actualization. Second, employees at any level know more about the processes they own than their supervisors, or any specialist, because they are more intimately involved with the processes. They feel, see, smell, hear and experience details of their process that supervisors or specialists do not experience. They are better at recognizing what aspects of their processes need improvement first, second and so on. They are also better at developing improvement approaches because often they have been thinking about better ways to do their job

for a long time. They are inclined to look for improvements that make their job easier as well as more cost effective.

The disadvantages of the Six Sigma type approaches from my experience are that sometimes the workers resent outside experts coming to change their work processes and the outside experts aren't as familiar with the work processes as are the employees that own the processes. I have observed that the process owners tend to create simple and effective improvements whereas the highly trained experts tend to go for elegant and expensive improvements, but not necessarily any better improvements. Another disadvantage is that the experts attack the most important processes first and work their way through enterprise processes a few at a time, depending on how many experts there are. With TQM all processes are subject to attention at any time. The process owners naturally prioritize processes they own but even simple processes get attention that are unlikely to be addressed in a Six Sigma approach until all higher priority processes have been addressed.

An apparent disadvantage of TQM is that all employees must be trained and therefore the training costs tend to be higher than for Six Sigma, assuming only a few employees are given the full Six Sigma training. I believe this extra cost is more than offset by the more comprehensive attack on process improvement that TQM achieves and from the increase in employee motivation that results from empowering employees to have control over their own processes. TQM also requires a more careful introduction to empowering employees after they have been trained. There must be boundaries to the empowerment and these boundaries must be carefully communicated to the employees as they are empowered. Otherwise employees adapt their individual definitions of empowerment and some naturally expand the boundaries beyond what is acceptable in an efficient enterprise that is under control. Obvious examples of items employees are not empowered to change include recipes, standards and accounting rules; changes of which must be handled very carefully and usually with management involvement.

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KanBan vs. "The Pile" - Lean in the Laundry Room

By Bill Hanover

With seven children and two adults all living in the same house we have found that applying a little Lean here and there has made our lives together a lot more enjoyable.

Our laundry room is a good example of "everyday Lean." For years we embraced "The Pile" as it was affectionately known, as a way of dealing with a significant amount of dirty laundry a family our size can generate.

Maintaining the pile was easy, almost effortless, and we all grew accustomed to its trappings. One would simply throw their dirty clothes or towels etc. into the pile and mom would wash them as time allowed.

The pile, however, took on a life of its own, growing and changing shape much like "The Blob" of horror movie fame. Sometimes the pile was so out of control that just entering the laundry room was challenging even for the most advanced spelunkers and rock climbers in the family.

In truth, the pile left us wanting as we would often run out of critical items. On many occasions we found ourselves scrambling and picking through the pile at fever pitch to find and wash "out of stock" items like socks or underwear. In retrospect, this back breaking, inconvenient, and annoying task marked the beginning of the end for the much maligned pile

On wash days Mom, and others, would square off with the pile in a contest of wills marked by frustration and perspiration. Eventually, and after considerable effort, the pile would be reduced to several smaller piles sorted according to color and type and the washing would ensue.

When all of the sub-piles were gone, magically, without any hesitation, a new pile would begin to form as if the primordial ooze of cloth itself was perpetually self-generating into a new life form, all the while mocking those who sought to overtake it.

And so it was for years; battles won and lost on both sides, but the pile always maintaining the upper sock.

Knowing something of Lean and being rather battle weary with the pile, I began to look at new strategies to gain advantage over our common foe. KanBan, as it turns out, held the keys to certain victory, but how could one apply KanBan in a laundry room and beat the pile?

At last it came to me, and the illustration below shows the ideal state of laundry nirvana that we have enjoyed for nearly ten years.

The Layout:

1. 4 large tubs (1 tub = 1 washer load) Two of the tubs sit on the floor and two tubs sit on a small shelf directly above the others. I made and installed the shelf with a couple of basic shelf brackets and a piece of plywood.

2. 4 signs designating which items are to be placed in each corresponding tub (I even color-coded these for children who could not yet read) See Image Here

The Process:

1. Every family member (except our 1 ½ year old) is expected to sort their own dirty clothes into the tubs provided in the laundry room. It's pretty straight forward really, and yes, occasionally the little ones do make minor mistakes.

2. Mom or Dad will ask any of our older children to "please wash a load of laundry." To which our children dutifully reply something like "How come I always have to do it?" or something like that, but that's another story.

3. The poor picked-on child will then look at the various tubs of laundry and select one that is full or very nearly full and empty it into the clothes washer beginning the wash cycle. (In the example on this webpage the "Whites" are the clear winner.)

4. If no tubs are full the process is put-off until at least one tub becomes full.

5. If more than one tub is full the child is left to decide which tub to begin with (and it really doesn't matter where they start.)

Well, there it is. The system is visual and simple to use. The tubs define the proper amount of clothes for a load, and the level of clothing in each tub determines which items are to be washed and which items can wait a bit longer.

In case you're wondering, no one could load the washer unless they had first placed the clothes in the washer into the dryer; and of course, they couldn't do that unless they had likewise unloaded the dryer. As with any good process, one step leads quite naturally to the next.

The "laundry mantra" in our home is "wash whatever's full." With just a little KanBan ingenuity and a few dollars spent at the Home Depot we managed to beat "The Pile" once and for all.

Don't ask how we've managed only having one bathroom shared among 9 people in our 100+ year old home; that is more of a SMED issue.

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The Tools in Lean Manufacturing

By Mikkel Smith

The most important and efficient tools in Lean Manufacturing

Value Stream Mapping
Value Stream Mapping gives an overview of the whole value stream in a structured way. The mapping identifies the flow and the amount of waste in the value stream. Based on this information a new future state is drawn.

5S - System and order
5S is about creating organized work places where you will only find tools and parts that are often used. All other tools and parts are either placed near the workplace or removed. It may sound easy - but unfortunately it is not! The advantages are reduced change over times, reduced time for searching, reduced process times etc.

OEE - Maximized utilization of bottlenecks
OEE stands for Overall Equipment Efficiency. OEE gives an overview of the utilization on the measured machines. OEE does not solve problems but shows the loss factors for each machine. In this way the utilization on the bottlenecks can be improved and the overall capacity increased.

SMED - Reduction of changeover times
SMED stands for Single Minute Exchange of Dies. SMED is a simple tool to get an overview of the changeover time on a machine and thus reduce the changeover time.

Flow - Create flow in a production
It is crucial to create flow as flow is the most efficient tools to eliminate waste in a production. However it is difficult to implement flow because the machines become more dependent on each other. Before flow is created, fluctuation in the machines performance is solved with inventories. If physical flow is created without stabilizing the machines beforehand, there will be many stops and a lot of frustrations. Therefore start with OEE, SMED, 5S etc. - and then create flow!

Pull - Create order based flow
Once flow has been created, it is time to produce based on real customer orders. The saying is that orders are pulled through the production - instead of being pushed.

Kanban - Simple stock control
Kanban is a good solution where flow cannot be created. Kanban is a simple and visible reorder system. There are some requirements to create successful Kanban, but where Kanban is possible it is often implemented with great success.

Visual Control
Lean gives a more visible control of the production when it comes to work places, flow, planning, problem solving etc.

Kaizen - Continuous improvements

The key element in Lean is to create a culture of continuous improvements. The organization should constantly strive for perfection - reduce waste and produce more value to customers.

Read more
Read more about Lean and download Lean presentations and software online at http://www.flexinfonet.com

Mikkel Smith

http://www.flexinfonet.com

Article Source: http://EzineArticles.com/?expert=Mikkel_Smith

Lean Management Tools and Six Sigma Integration

By Tony Jacowski

The integration of Lean management tools and Six Sigma produces a synergy that can work wonders for many companies.

In order to achieve the integration with Six Sigma it is imperative that Lean management tools are incorporated with caution and wisdom. If not done properly, it can cause considerable damage.

Recent experiments in a business unit of a Fortune 10 company found five Lean tools and principles that can be safely introduced into a Six Sigma framework.

- Cause-and-Effect Diagram or Ishikawa and 5 Whys: When concrete statistical data is not available in the Analyze phase, it becomes difficult to identify the root causes of a problem.

On such occasions, applying 5 whys in conjunction with the cause and effect diagram can make the job easier. It is a visual tool to logically organize possible causes of a problem area.

- Takt Time: The German word 'Takt' meaning 'beat', is the time it takes to finish a project to the fulfillment of customers' demands. During the Analyze phase, the cycle times can be compared to current SLAs (Service Legal Agreements) for processes that involve cycle times.

In the event of a mismatch exceeding tolerance levels, improvements will be needed for matching the cycle time with the takt time.

- Value Stream Mapping: During the Analyze phase, a value stream map helps categorize value enabling, value adding and non-value adding activities. The focus is on identifying and eliminating the non-value added activities in each process step, leading to the reduction in the waiting period between consecutive steps wherever possible.

The process becomes compact, which is beneficial in the process improvement projects that are aimed at reduction of variation. Value stream mapping can be made a part of a Kaizen cycle that is included in the Analyze and Improve phases.

- Mistake-Proofing or Poka Yoke: This Japanese phrase, meaning mistake proofing, can be used to fine tune process steps. It is also useful when creating a new system with DMADV (Define, Measure, Analyze, Design, Verify).

The Pareto analysis and Ishikawa chart bring out the problems of the current process. During the Improve and Design phases, ways for error elimination can be investigated and the process improved or redesigned in its entirety.

For example, in a software system where data needs to be entered, if there are two options such as 'end' and 'quit' which seem similar in utility, there can be mouse-over text added, specifying the utility of each option in clear terms.

- Heijunka Or Load Balancing: This system of production design is aimed at providing a more even and consistent flow of process work. In the Design phase, the principle can be used to eliminate the bottlenecks that may have been identified in the Analyze phase.

Load balancing can be used to introduce a level load balance in the system that introduces push systems to eliminate bottlenecks. Load balancing helps reduce inventory as well.

A workout can be undertaken to design a roadmap for the integration of lean and Six Sigma and include the lean tools and principles into the system. This will help improve the tangible benefits and turnaround time for improvement projects.

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Single Minute Exchange of Die (SMED) FAQs

By Neo Tiong Wee

1. What is Single Minute Exchange of Die (SMED)?

Single Minute Exchange of Die (SMED) is a simple but powerful Lean technique for reducing waste in a manufacturing process. It is a systematic approach that enables organizations to dramatically reduce set-up time or changeover time. It provides a rapid and efficient way of changing the machine set-up in a manufacturing process from one product to another.

2. Why is the SMED important to improving manufacturing flexibility?

SMED reduces the set-up time. Set-up time is the time elapsed at a work centre from when the last good part of the current run is completed until the work centre starts running the first good part of the next run. Long set-up time resulted in a reduced number of set-ups, larger batch sizes and larger buffering work-in-process inventories and poor process flow and performance. Since set-up activities add no marketable form, fit, or function to the product, they are by definition non-value adding. By reducing set-up time, more set-ups can be completed each day, batch size can be correspondingly reduced, flow can be significantly improved. All these improvement will help to improve manufacturing flexibility.

3. What are the other names of Single Minute Exchange of Die (SMED) technique?

Single Minute Exchange of Die is also commonly known as:

- SMED
- Quick Changeover
- Set-up Reduction

4. What is the history of Single Minute Exchange of Die (SMED) method?

Single Minute Exchange of Die (SMED) method was pioneered by Mr. Shigeo Shingo since 1950 in Japan, but only became popular to the other part of the world in 1980s.

5. What are the 4 stages of Set-up Reduction?

Stage 1. Ensure that external setup actions are performed while the machine is still running,
Stage 2. Separate external and internal setup actions, ensure that the parts all function and implement efficient ways of transporting the die and other parts,
Stage 3. Convert internal setup actions to external,
Stage 4. Improve all setup actions.

6. What is the definition of Internal and External activities?

Internal activities are those that can only be performed when the process is stopped, while external activities can be done while the last batch is being produced, or once the next batch has

started. Examples of external activities include pre-heating of raw material and preparation of tools before the machine stops.

7. What is the best way to see immediate results when implementing SMED technique?

One of the best ways to see immediate result of the technique is to perform a kaizen event using SMED technique on a pilot machine. The kaizen event usually takes about 3 to 5 days and will repeat the 4 stages of SMED over several iterations. A good rule of thumb is to target 50% improvement for each iteration, and repeat the process until the target is achieved.

8. How can SMED helps in Lean implementation?

Most people's initial reaction to the quantum improvement brought about by SMED is disbelieved, followed by total acceptance and commitment to Lean transformation. So if you need to gain some ground support and buy-in in your Lean implementation, consider a pilot project on SMED for a good head start!

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Flow Charts As a Set-Up Reduction Tool

By John Novak

A large part of effective departmental management is meeting shipping deadlines. Many times meeting those deadlines, or lack of, can be attributed to small, overlooked performance variances.

Everyone has heard the phrase "work smarter, not harder", but how many times do we actually put that philosophy to work in out everyday lives? The workplace is the most important place to implement this ideal, as not doing so can have a tremendous influence on the workings of a department, and in the end, greatly impact the department's productivity.

I have always found that if I plan out my activities, be it the improvement of a lack luster department, a busy day of yard work, or perfecting my golf swing, the most effective way to accomplish my objective is to plan out the activity in step by step detail. This use of a personal flow chart, helps train the mind to work effectively and to minimize unnecessary steps that can lead to unmet deadlines, or even a worm burner golf swing.

In one of my management positions, there were problems with meeting shipping deadlines sixty-five percent of the time. The same employees were producing the same number of parts in the same amount of time, so their production was not the problem. Materials were always readily at hand, and therefore were also ruled out as the problem.

In analyzing all the stages of production, I had the chance to observe the various set-up associates changing over the jobs for the next operations. Each one went about the set-up differently. Some even added unnecessary steps that greatly influenced the total set-up time.

In a brain storming meeting with these associates, it was discovered that there was no set order in most of the set-up operations, Some of the associates even began the job without all the proper tools.

An effective flow chart was then drawn up for each set-up job, outlining the step by step set-up, tools required for it's operation, and the time requirements for each set-up operation.

The use of the flow chart for each set-up operation not only proved to be an effective way to standardize the set-up procedure to eliminate unnecessary steps and to meet ninety-five percent of our shipping deadlines, but ultimately was used as a learning tool for cross training existing associates to fill unplanned vacancies, and as the training guidelines for newly hired associates as well.

The flow chart can and should be used as a visual tool to tackle any job that needs to be done repeatedly and by one or many individuals. Our met deadline record was proof of it's success and my golf swing is improving, do to it's use, as well.

John Novak is a father and husband. He has 15 years of hands on management experience including manufacturing supervision and quality control. He is the author of several articles on productivity, quality control and effective management. He is a 2004 edition member in the National Register's Who's Who.

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Total Productive Maintenance - Why Every Plant in the World Is Very Interested in TPM

By Sembang Kilang

Definition of TPM: Total Productive Maintenance or so called TPM is a maintenance system that applies to a machine in order to make it running or function at optimum as required. The total productive maintenance system is implemented by a small group consisted of 5-6 members for a number of machines and area. Most important TPM must be involved by all levels in addition of top level including Directors to bottom level.

So why every plant in the world is very interested in total productive maintenance?

It is very simple actually. All plants or companies want a big profit and therefore, waste or lost need to be eliminated. In a plant there are two things that produce a product, a machine and a people. These two are the basic and foundation of any operation. Therefore, they are among major contribution in making waste and lost to plant. However most of the plants consider them an important asset.

In order to minimize waste and loss, these two need to be kept operating effectively. Therefore, a program and activity to take care both must be implemented. For man, of course, we don't have much choice but to take care of ourselves. However, to machines, we also don't have much choice but to take care by ourselves since the machine not yet been able to take care by themselves.

Involvement of machine in making products is very critical either in auto or manual. To care machine we must have a maintenance program. Total Productive Maintenance is one of the best programs to maintain the machine. It has been applied for many years and many plants all around the world. We must understand that most plants now a day are using machine to produce products. Almost 90% of making product are made by machine, doesn't matter small or big the plant. All plants are racing against each other to increase the productivity in order to produce a product to meet customer needs. So therefore to keep the machine at high efficiency is very important.

Imagine that you are building a factory. The first most important step in making a building is to ensure that the foundation or basement is very strong. Therefore, the building will not collapse in the future. The same applied to a production operation. Ensuring the machine running at high efficiency is the most important step. We must agree that Total Productive Maintenance (TPM) is the foundation of a production. When we have this strong foundation then improvement of a production system such as a Toyota Production System (TPS), it will become successful.

We are not just talking about producing a high volume of products but also a high quality of products. Since 90% of products are made by machines therefore by implementing Total Productive Maintenance (TPM) is very much contributed to a high quality of product. Since Total Productive Maintenance (TPM) has been proven to one of the best programs to ensure

smooth daily production, therefore, many plants in the world are trying to implement it until today.

Visit: http://sembangkilang.com

SembangKilang.com consists of free Manufacturing Systems articles. Full of free information of total productive maintenance, maintenance system, lean manufacturing and many more.

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Mistake Proofing or Poka Yoke

By Tony Jacowski

Thrashing out mistakes in manufacturing engineering was developed by the Japanese as a tool of mistake proofing that helps reduce waste in areas such as time, energy and resources. The idea stresses on producing zero defects as a part of a quality tool kit to prevent human errors. Although Poka Yoke is applied differently in different situations, the common thread that binds them all is its simplicity; it uses small tools at the point of the anticipated mistake generation itself.

Empowerment of Employees As A Tool of Poka Yoke Development

The beautiful part of mistake-proofing is the empowerment of employees to identify, suggest ways out and execute the plan to iron out the cause of the mistake at its point of origination. In fact, anybody from a manager to a line employee can be allowed to complete mistake proofing planning. It applies to every other area, including commercial transactions, in the same way.

How Can Activities Be Mistake-Proofed?

Mistake proofing is simply managed by presence of mind. Sometimes it so happens that an employee notices a mistake in the way things are done in his section or line. Generally, exposure to multiple aspects such as work content and execution procedures let the employee think about ways of rectifying the mistake.

One who has noticed the mistake will come up with suggestions for eliminating the mistakes by rather simple methods. Empowered environments nurture enthusiasm in employees, which ultimately results in success.

Lets take different simple examples. Colgate Palmolive was losing its market share to a rival toothpaste producer and the people in their marketing department could hardly help reverse the trend, despite their best efforts. This was until an employee in the packing department suggested a rather simplistic idea that ultimately has shown results. The employee suggested enlarging of the tubes opening, which increased the amount of paste issued each time the consumers wanted to brush.

Where does mistake proofing figure into the equation in this instance? The mistake was not in the manufacturing, packing or quality of the product but in the way it was marketed. The marketing was centered around an emphasis on quality and not on the quantity the consumers should use, which was irrelevant in the absence of severe competition.

Mistake elimination need not have complex solutions that consume lot of time and resources. Simple solutions can sometimes be arrived at by those who work on the shop floor. Let us look into another example which significantly explains Poka Yoke. Take a small mistake in the assembling of pens, such as a forgotten spring for operating the writing tip by a button located on top of the pen. The assembly worker would not have forgotten if he was given all of the components in sets rather than each part like springs, refills etc separately.

The Simplicity Of Poka Yoke

Quite evidently, Poka Yoke is pretty simple. It does not involve spending huge sums of money, time and complex procedures. It employs making the best use of empowered human minds. If it is used on a continuous basis with the goal of eliminating many smaller mistakes, the results can be wonderful.

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Article Source: http://EzineArticles.com/?expert=Tony_Jacowski

Are Standards Enough?

By Rob Thompson

Frederick Winslow Taylor, the father of scientific management, introduced what are now called standardization and best practice deployment. In his Principles of Scientific Management, (1911), Taylor said:

"And whenever a workman proposes an improvement, it should be the policy of the management to make a careful analysis of the new method, and if necessary conduct a series of experiments to determine accurately the relative merit of the new suggestion and of the old standard. And whenever the new method is found to be markedly superior to the old, it should be adopted as the standard for the whole establishment."

How relevant is this now?

Well, I think the main issue with standard work is that I all too often hear people confusing it with work standards or even engineering, quality or some other type of technical specification which has been imposed. The two terms become interchangeable in everyday language but they mean different things.

Work standards tend to come from new product or process development and attempt to try to lock in certain work standards, for example, speed of the machine should be X, torque value should be Y, or drying time should be Z. In my experience, these are often backed-up by a change management process to allow controlled changes to be made, often as part of an ISO type of quality system. This is generally a reactive way of working, perhaps in response to a customer complaint or an incomplete or ineffective error-proofing device which allows too many rejects to be produced. A more proactive way is, as you said:

"the person who does the work can kaizen their work".

John Shook said as much in one of his recent blog posts:

"integrate people with process (the social with the technical). Nowhere does that come together more than in the form of standardized work and kaizen."

Standard work uses takt time (customer driven timing and process constraints), work sequence (the best sequence of building the product) and SWIP (how much in-process work, data, information, material, etc is allowed).

For me, work standards come first then standard work then PDCA. Not the other way round.

In addition, as stated in your comments, manufacturing is shifting away from high-volume, low-mix production to high-mix, low-volume production, as consumers increasingly want products specific to their exact needs. The key to success here is to learn how to schedule production effectively, avoiding bottlenecks that stop upstream processes and kill downstream ones. So, split each order into batches which can all be assembled in approximately the same amount of

time by understanding how much time is needed to complete each step for each product. This is where SMED helps enormously.

Rob Thompson is a UK Quality Assurance professional who blogs about his work here: http://learnsigma.com

You can also check out my lifestream here: http://www.profilactic.com/mashup/robthompson

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Standardization For Increase Productivity and Efficiency

By Lance Winslow

Standardization makes complex systems efficient and perhaps that is why we have business laws and rules that everyone agrees to in our economy as businesses move to deliver all the goods and services that the consumers desire. Without standardization in all regions of our nation, there would be different rules and systems and getting anything anywhere would require an abundance of duplication and lots of folks sorting it all out. So, thank god we are the United States of America and not the United Countries of North America.

Standardization also matters on a smaller scale, for instance consider an airline. If the airline has all the same types of aircraft built by the same manufacturer that means its parts inventory is standardized too, this keeps things efficient as possible and simple too. In business no one can doubt that simple is good, thus the quote; "KISS Keep It Simple Stupid" and efficiency translates to profit; i.e. "every dollar saved is a dollar earned."

When a company can cut down on the number of forms it has such as Microsoft did and Bill Gates bragged about in his book; "Business at the Speed of Thought," this standardization not only helps the rain forest by cutting down fewer trees, it also completely streamlines the paper work process to the point that everything moves quickly during the administrative process.

Even small companies improve productivity and efficiency when they standardize. Before retirement I ran a franchising company and we were continually working on streamlining our franchisees operations so they could make more money. On our Mobile Oil Changing franchise system, we had standardized all the equipment, so any employee could operate any work truck, trailer or van, no matter which one they were trained on. Standardization is a friend to business productivity, so please think on this.

"Lance Winslow" - Lance Winslow's Bio. If you have innovative thoughts and unique perspectives, come think with Lance; http://www.WorldThinkTank.net/.

Article Source: http://EzineArticles.com/?expert=Lance_Winslow

How to Implement a Kanban in Lean Manufacturing

By Michael Baker

Lean manufacturing, well known among large corporations, in fact most companies all over the world have implemented some form of lean manufacturing, no matter what their size is. A big part of lean manufacturing is the Kaizen and Kanban methods. But in a Toyota production system, these methods cannot exist alone without total facility analysis and the implementation of the lean process in general. The Kanban means one thing that is visible, in Japanese and according to the best lean manufacturing system every product should be made as one until it reaches the customer but this is not very efficient in production methods. Still there are ways of implementing the system of "one" within the lean manufacturing system.

Even small businesses are implementing different forms of the lean system. The only problem is that they don't have the funds to bring in a specialist to implement it into their business. What they do is attend a seminar or two and try to implement lean into their business. Along with lean manufacturing, certain methods are included like Kanban and the kaizen method, but one method does not work without initiating the whole.

In a lean processes there are several teams formed for each department that involves the manufacturing of the part. These teams are formed to produce communication between the different departments. First you meet and get to know every person in your group and then you train those members in world class manufacturing and in other methods like Kanban and Kaizen. Kanban and Kaizen methods cannot be implemented without first implementing the basic system.

The process can be implemented into any department within a company, but first a complete analysis needs to be done to identify what areas need more efficiency including areas such as maintenance, sales, service, engineering production and even shipping. The key is to know the areas that need to be worked on and implement the plan, and this plan may be ever changing and ongoing.

A method within this system is the KanBan, which is Japanese, meaning something that is visible that helps in the transporting, moving or production of a product. This visible thing can be an electronic signal which signals the moving of a product from one station to another, a pallet on which product is put and then moved to another area, a bin with the same intentions, or anything similar.

The kanban method helps you manage inventory or processes; they allow you to know what is in stock and what has been shipped very easily, because each kanban has a certain number of products within. Even when you use an electronic signal you know how many of a product is shipping and how many are produced. As an example, lets assume the kanban is an electronic signal and you are producing refrigerators. If you implement a signal for 20 refrigerators going through the installation of thermal insulation, then you know that the next production area receives 20 refrigerators, etc.

As mentioned before the kanban method cannot be started and worked with efficiently until you really understand how it works. If you don't have the right organization and equipment the kanban system will not make much of a difference.

Lean manufacturing works as a whole, and certain methods like kanbans and kaizens work within the whole lean system. By the same token you cant have a lean system if you don't have kaizens or kanbans.

Lean Manufacturing Secrets can help you and your company increase profits, while reducing wastes. And, on of the first steps you can learn is how to implement a kanban system.

Article Source: http://EzineArticles.com/?expert=Michael_Baker

Reducing Training Costs With One-Point Lessons

By Brice Alvord

One-point lessons are a simple yet powerful learning and operational tool. When applied systematically throughout the work site, one-point lessons provide many benefits. They can help deploy just-in-time knowledge and skills across an organization. They also positively affect employees' abilities to perform daily tasks as well as improve an organization's cost efficiency and product quality.

As an aid for spreading best practices company-wide, one-point lessons can support and enhance improvement efforts such as Lean Management, Just-In-Time (JIT) Production, Total Quality Management (TQM), and Total Productive Maintenance (TPM).

One-Point Lessons

One-point lessons are short visual presentations on a single point. One-point lessons have three purposes:

• They sharpen job-related knowledge and skills by communicating information about specific problems and improvements.
• They easily share important information just-in-time.
• They improve the team's performance.

Characteristics of One-Point Lessons

One-point lessons are:

• Short visual presentations on a single point
• Detailed on one or two pages
• Supported by diagrams, photographs, or drawings
• Generated and used at the point of need

A one-point lesson is a learning tool for communicating standards, problems, and improvements about work processes and equipment. Workers and supervisors use one-point lessons to provide key information about everyday work and improvement opportunities. Thus, one- point lessons may contain information on a wide range of topics.

Types of One-Point Lessons

Three types of one-point lessons exist; each type has a distinct purpose:

• Basic Knowledge
• Problem Case Study
• Improvement Case Study

Basic Knowledge

Basic Knowledge one-point lessons fill a knowledge gap. This ensures that team members have the knowledge they need to do their job or participate in improvement activities.

Problem Case Study

Problem Case Studies use actual examples of breakdowns, defects, and other abnormalities to illustrate how to identify and/or avoid a workplace problem.

Problem Case Studies are most effective when presented immediately after a problem occurs, while the issue is still fresh in everyone's mind.

Improvement Case Study

Improvement Case Studies summarize the concepts, contents, and results of improvements that result from team activities. This helps teams in other areas to make similar improvements.

Where to Use One-Point Lessons

Examples where one-point lessons may be applied are:

Quality

• Defective incoming material or products

• Causes and prevention of defects

• Materials or product specifications

• Methods for finding and discovering abnormalities in equipment and materials

Inventory

• Materials inventory control specifications

• Product inventory control specifications

Equipment operation

• Changeover operation

• Startup sequence

• Monitoring and inspection methods

• Shutdown and lockout/tagout sequence

• Cleaning and maintenance protocols

Safety

• Emergency stopping methods

• Safety standards for use of tools and equipment

• Reliable methods to prevent accidents

Maintenance

• Cleaning procedures

• Adjustment procedures

• Inspection procedures

• Lubrication procedures

Inspection

• Methods of inspection

• Acceptance inspection specifications

• Product inspection specifications

Improvement tools

• Checklists

• Cause-and-effect diagrams

• Control charts

• Red tags

In other words, whenever workers need key information to perform their jobs, one-point lessons can be an effective tool for delivering that information.

Sharing Knowledge Among the Team

Team leaders and members who have acquired special skills or knowledge need a way to share their knowledge with their teammates. Rather then merely repeating what they have learned, they

should put it in a form that suits their workplace. One-point lessons translate knowledge into practical information that teammates can use to effectively perform their jobs.

Additionally, one-point lessons are an effective training tool because:

• They are short and focused on a topic that team members need to know about.

• Information can be presented in bite-size chunks, when and where it is needed.

• They offer a simple vehicle for going over the material until everyone has mastered it.

• They offer a flexible way to deliver training on the floor, during meetings, during production activities, as well as during formal training.

• The act of teaching develops communication and leadership skills on the team.

• They are good tools for training new employees or transfers.

Conclusion

We have discussed how companies use one-point lessons to eliminate waste and improve operations by providing just-in-time information. We have described the kind of information contained in a one-point lesson and how this information can be used as a training tool to sharpen the knowledge and skills of the entire team. We have discussed the three types of one-point lessons: Basic Knowledge, Problem Case Study, and Improvement Case Study, and have reviewed examples of each. Finally, we have briefly discussed the steps involved in one-point lesson development.

Brice Alvord has over thirty years experience as an internal and external performance improvement consultant. He holds a BA in Sociology/Psychology from Central Washington University and an MBA degree from City University of Seattle. He is the author of over two dozen books on continuous improvement and training.

Article Source: http://EzineArticles.com/?expert=Brice_Alvord

Applying Lean Tools to Transactional Processes

By Willie Carter

Lean is a philosophy of continually reducing waste in all its forms. It is about defining value in the eyes of the customer. The ultimate goal is to have a customer (internal or external) pull a quality product or service they want in a format they want, when they want it at a competitive price.

To apply lean to administrative (transactional) processes it is necessary to focus on providing value to your customer from beginning to end. Eliminating waste in your administrative processes is absolutely necessary to give your customer the best value. Value stream mapping is a lean tool that can help redesign your processes to eliminate non-value-added activities. Value stream maps can help you identify the following seven types of wastes:

1. Overproduction or early production (printing documents or brochures before they are requested.
2. Waiting caused by unavailable resources or poor scheduling (delays due to the availability of an operation or specialist to complete the task).
3. Unnecessary transportation of information, paper, etc. (routing forms for signatures).
4. Overprocessing (duplicative or redundant meetings)
5. Excess raw material and work in process (WIP) inventory (stacks of paper or emails in your in-box).
6. Unnecessary movement of people (travel when a teleconference would suffice).
7. Defects (errors in documents or transactions resulting in rework)

There are a number of lean tools that can be applied to transactional processes:

Standardized Work is a way to ensure that each job is organized so that it is always done the same way, the most efficient way possible, ensuring quality no matter who does the work.

Continuous Flow can be used in the administrative environment to allow staff to complete a sequence of individual tasks on demand instead of completing tasks in large batches.

5S Tools (sort, straighten, shine, standardize, and sustain) are useful for organizing your workspace so that you can find anything in that workspace in one minute or less and anywhere else in your area in less than 5 minutes.

Set-up Reduction is used to minimize the amount of time consumed changing from one task to another.

Poka-yoke (error/mistake proofing) is useful in helping you devise mechanisms to prevent mistakes from being made or at the very least make mistakes obvious at a glance.

Point-of-Use Storage is an approach to office layout where all supplies needed to do a job are stored where they are used.

Kanban is a simple visual system that pulls work from an upstream operation to a downstream operation to prevent documents from piling up at the downstream operation.

Kaizen is the philosophy of continual improvement that is applicable to any process.

Every organization must recognize that becoming lean is an important goal not only in production processes but administrative (transactional) processes too. Consider that 60 to 80 percent of all cost associated with meeting a customer's demand-whether it is a manufactured product or a work request (i.e. an insurance claim, employee job application, invoice, order, quote, or engineering drawing)-is an administrative function. It is absolutely essential that you apply the lean tools to your administrative functions to get more work through in less time and with greater ease.

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Want to Make Tremendous Gains at Your Healthcare Site? Use Process Mapping!

By Donald Bryant

I want to tell you some ways to eliminate waste at your medical site. Am I talking about physical waste, like soiled bandages or used needles? No, I mean any action that results in a poor or unintended outcome. I mean taking too long to accomplish some outcome, like taking too long to get an operating room ready for the next surgery. The National Institute of Health in "Crossing the Quality Chasm" stated that any waiting time for a patient is a waste. A patient waiting past the time of his/her scheduled appointment is an example. A patient having to wait too long to be admitted to a hospital after being seen in the emergency room is an example of poor processes—a waste. A patient who develops an infection after being treated or going through surgery is a good example of waste from unintended outcomes. These are just a few examples. I am sure that you are aware of many more.

Japanese manufacturers are leaders in eliminating waste. One trick they use is to send a new employee to the manufacturing floor and have him/her watch someone performing a task; the new employee is told to watch until he/she sees a better way to do the job. These manufacturers know that the time spent doing this will save more time and money in due time. Hospitals and healthcare sites are not manufacturing plants, though. Yet many of the same principals can be applied. The effort will more than pay for itself. In fact, savings of 3 to 100 times the investment is not unusual. The movement going on in the healthcare field adapted from the Japanese manufacturers is commonly called "lean healthcare." Perhaps you have heard of some of the terms associated with it, like Kaisen events or poka-yoke. You don't have to be a master of these tools and terms to make good use of them, though. Many are just applying logic with common sense.

The tools are best applied in efficient working teams or groups where some problems with processes or outcomes are already agreed upon. If the working group is larger than 3 or 4 people I suggest that one tool you use are string and 3 by 5 cards. You are going to use these to map out a process from beginning to end and see if the group can find waste and suggest ways to eliminate it. Use the cards to describe what physically happens during a process and use the string to connect the activities that flow from one to another. For example, you might want to track a patient in a doctor's office coming in for a physical. The first card would represent the patient's encounter with the first staff person who records the patient's presence. From there, strings would indicate communicating with other pertinent personnel of the patient's presence and the ensuing events as well a string and card that would indicate the patient waiting in the waiting room. In all of these mappings you should be thinking of what you would like to use as variables to measure. You certainly should be measuring time by all involved parties. You might also want to count the number of successes/failures in communications. Many unintended

consequences occur at transition points and handoff points due to poor communication. You might count if a supply was missing and someone had to scurry to find another one. You will want to later find the mean and standard deviations of these measures. The goal is achieve a target mean with as small as possible standard deviation. For example, you should have 0 as a target for the number of times a supply was missing.

After reaching a mapping that all agree represents as best as possible the present flow of events, the group should brain storm ways to improve the flow. The goal is to find a significantly better path. If a consensus is reached, fine; implement it. If not, then perhaps you will want to try the various ways and then decide which is best, based upon agreed upon measures of outcomes.

Once an optimized process is developed by the staff, you should write it down. Make it a standard operating procedure and try to have all involved parties adopt it. You might want to allow a little bit of wiggle room for individual differences in performing a task; the goal of a common target with small standard deviation should the goal of all, though.

Another tool to use is open communication. Too often a staff person or nurse will see some event unfolding that will lead to poor outcomes. If the work environment is not conducive to positive communication—communication which does not result in negative outcomes for the reporting individual—mistakes and waste will always occur that could easily have been prevented. To reach a high level of positive communication, the leaders at a site must work long and patiently to build trust. It is not easy to do, but the payoffs are tremendous. Everyone wins!

Most healthcare leaders think of quality improvement as applying to activities that directly involve the patient. However, the best healthcare providers use these tools and others to evaluate all the processes at a healthcare site. The admissions and billings departments are ripe targets, for instance. The result will be happier, more motivated employees who are working more efficiently. In fact, sites which were experiencing a shortage of staff often finding themselves well staffed because of quality improvement processes. I do suggest that you promise all employees involved in these processes that you guarantee there will be no layoffs. Doing so will produce better outcomes.

If you want more examples of system wide applications of quality improvement in healthcare facilities, I suggest that you go to the Baldrige Award site on the internet and read the success stories of winners. Their results will amaze you, I promise.

I hope that you seriously consider adopting these tools and research other methods. Many are described at various healthcare sites. Two of my favorites are Institute for Healthcare Improvement and the American Academy of Family Physicians.

Donald Bryant helps healthcare providers meet their challenges and writes “Making Good Healthcare Better” a free monthly ezine for healthcare providers who want to dramatically improve patient health, improve the bottom line, and make work more

rewarding, guaranteed. Go now to http://www.bryantsstatisticalconsulting.com to get a free article with tips you can use to start making improvements immediately and to learn more about Lean Healthcare

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Ed Biernat