

# Standardize work assignment



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Standardized work is one of the most powerful but least used lean tools. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. As the standard is improved, the new standard becomes the baseline for further improvements, and so on.

Improving standardized work is a never-ending process. Basically, standardized work consists of three elements: Takt time, which is the rate at which products must be made in a process to meet customer demand • The precise work sequence in which an operator performs tasks within takt time • The standard inventory, including units in machines, required to keep the process operating smoothly Establishing standardized work relies on collecting and recording data on a few forms. These forms are used by engineers and front-line supervisors to design the process and by operators to make improvements in their own jobs.

In this workshop you'll learn how to use these forms and why it will be difficult to make your lean implementations “ stick” without standardized work. Benefits: The benefits of standardized work include documentation of the current process for all shifts, reductions in variability, easier training of new operators, reductions in injuries and strain, and a baseline for improvement activities. Standardizing the work adds discipline to the culture, an element that is frequently neglected but essential for lean to take root.

Standardized work is also a learning tool that supports audits, promotes problem solving, and involves team members in developing poka-yokes.

[http://kaikaku.typepad.com/weblog/2005/12/standardized\\_wo.html](http://kaikaku.typepad.com/weblog/2005/12/standardized_wo.html)

Standardization has been ingrained into most business activities to uniformly

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produce products and deliver services at the lowest cost, the highest quality, complete safety and to the total satisfaction of our customers. The standard represents the best way of doing things. You examine the way the person with the highest skill does something and that becomes the standard for others to follow.

Standardized Work as used at Toyota has a simple but very powerful variation of standardization. A standard should be a unit of excellence something that should always be strived for. At most companies, the standard represented the best way work should be done, the correct procedure to produce a product or to deliver a service. It was there in theory but often neglected in practice. When I owned Productivity Inc. – Press I wanted standards to be set up, written down and then placed into a notebook.

But, in my mind, truly, the standard represented my “ security blanket,” for if a person left the company their knowledge of how to do things would not be lost to the company. It was a false sense of security for as soon you write something down it immediately changes, and rarely, if ever, would you take the notebook off the shelf and update it. When I first visited Toyota Gosei, a Toyota subsidiary producing, steering wheels, dashboards and rubber products for Toyota automobiles, I noticed a woman on the factory floor putting nozzles onto rubber hoses. In front of her was a piece of wood around one inch thick and two feet by two feet.

Onto the wood was the exact procedure of how the nozzle was to be inserted onto the hose. Also on the wood were examples of the perfect finished piece

of hose plus variations of hoses with errors. There were also the quality tolerances for her to check and there was space for her to write both the problems she detected and also a place for her to write her suggestions on how to improve the process. Most things that amazed me at Toyota was not the automation or high tech but those things that were very simple that helped people not machines do a better job.

Standardized work are simple documents found everywhere at Toyota to help people do a job of excellence. There is a standard on how to greet people when they come into the company, a standard on how to process an invoice, a standard on how to answer the telephone, a standard on how to assemble a door, etc. At Toyota workers are encouraged every single day to come up with improvement suggestions. And as their new ideas are tested, accepted and implemented the standard worksheets are updated.

Consider as you work in your Kaizen Groups how to make your decisions visible to all, how to prepare a standardized work form, and where the form should be displayed. <http://www.leanblog.org/2010/02/my-thoughts-on-standardized-work/> I've written about many of these ideas and themes before in various blog posts, but I wanted to consolidate my thoughts on the Lean concept of "standardized work" in a single place. This is partly for my own personal reference (and future linking), but also can prompt some discussion amongst my friends, the Lean Blog readers.

What I'm documenting here is consistent with what I've been teaching and coaching people on in healthcare the last five years, especially. The concepts described here are directly influenced by Toyota (especially the book Toyota

Talent: Developing Your People the Toyota Way) and, I believe, is very consistent with what's expressed in Dr. Atul Gawande's *The Checklist Manifesto: How to Get Things Right*). These points are also expressed in the chapter on Standardized Work in my book, *Lean Hospitals: Improving Quality, Patient Safety, and Employee Satisfaction*.

This is a loong post, so the quick bullets: • Standard-IZED • Don't standardize for the sake of standardizing • It's created by the people who do the work • It's not always a detailed procedure • It's not restrictive or limiting • It's not permanent • You don't beat people up for not following it

Standard-IZED In the past, I used the term "standard work." In fact, the tag I use here on the blog (look at the bottom of this post) is "Standard Work," not "Standardized Work." I'd also accept "Standardised Work" for those who speak the Queen's English. I think that one syllable makes a huge difference. Standard" implies fixed and inflexible. "Standardized" reflects, to me, a spectrum. David Meier, through his books and personal conversations, confirmed the idea that it's important to understand WHAT you standardize and to what DEGREE you standardize it. Is more standardization always better? Probably not always. You can take things too far, to an extreme that's not beneficial. If somebody in a laboratory is walking from one station to another, does it matter which foot they take their first step with? Of course not, there's no need to standardize that, no benefit.

Is there benefit to making call center staff read a script like robots, not letting them deviate or do what's necessary to serve customer needs? Probably not. Then again, working with one hospital, the radiology scheduling team created standardized work for how and when and what they

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communicated to parents of patients who were coming in for sedation and an MRI. By communicating in a more standardized way (not 100% scripted, but having key points), they significantly reduced process defects where parents came to the wrong location or the children had mistakenly eaten that morning, meaning they couldn't have their procedures.

I've found, that in many cases, healthcare (and patients) from more standardization. Experience and published evidence confirms that. In many healthcare settings, highly skilled people are working hard in what some describe as a " process-free zone. " There is a lot of evidence (see Gawande's books, including *Better: A Surgeon's Notes on Performance*) that standardized work leads to better patient safety and better quality outcomes. See ThedaCare's work in improving " door to balloon" time for " Code STEMI" patients and how they receive faster care (therefore, better outcomes) through standardization of work processes and care decisions.

Don't standardize for the sake of standardizing I've always taught that standardizing is NOT the goal. The goals are better safety, quality, access (waiting time), cost, and staff morale — these are the usual goals of a Lean organization. Since we're very concerned about staff morale (especially since staff satisfaction correlates very well to patient satisfaction in healthcare), we have to think about how people would feel if they're FORCED to follow an arbitrary procedure – is this good for morale? Probably not, especially among highly-skilled professionals.

There must be a clear " why? " statement for standardizing in a certain way. High-level example: Why is doing it consistently good for quality? Again,

consistently doesn't mean robotically identical. Back to the laboratory example above, I can think of one example from my past where it DOES matter greatly — a marching band. Fellow band geeks will know you always take your first step with your LEFT foot. Beats “ 1? and “ 3? in a song are always your left foot. Why is this important? Visually, for the marching band performance, it looks better when people are stepping in unison.

When you march in a line, you stay better aligned. Does it matter in almost any other setting NO? You always have to understand the purpose and the context of what's being done. It's created by the people who do the work “ Work standards” are the old-school approach – inflexible, detailed procedures pushed on people by managers, engineers or experts. This is the old Taylorist approach that separates thinking from doing. This is not the Lean approach, as I've learned it. Lean standardized work is created by those who do the work.

It was the case at Geisinger in Pennsylvania, where a cardiology group created standardized work for better cardiac bypass surgery care.

Standardized work was created Dr. John Tebbetts, a Dallas cosmetic surgeon, and he specifically credits Lean and Toyota in his peer-reviewed medical journal articles. Be warned if you go downloading his journal articles, they have some “ NSFW” before and after photos. That point aside, HE created standardized work for how he performs surgery and his patients get better results. He owns the standardized work, since he created it and it has clear benefit.

It's not just doctors. I've worked with folks in many different hospital departments that created their own new standardized work. It's not always true that everyone gets to have their way on everything, it's more complicated than that. In the marching band, the standardized work (left foot first) was dictated to me. In the case of safety glasses in a factory or gloves in a medical laboratory, this is not optional – it's standardized work that you must follow for your own safety. We don't let the staff vote or decide on their own.

But very generally, people don't like to be told what to do, they don't like to be forced into an inflexible way of doing things, regardless of their education level. But if you do have to “dictate” the standardized work (and this had better be done rarely and judiciously), give them a good reason why. Treat them like adults, don't just bark orders. You can't depend on just blind compliance. It's not always a detailed procedure. Standardized work doesn't always mean a long, detailed document. Organizations, especially hospitals, usually have no shortage of procedures.

But they're pretty useless – they weren't written by the people who do the work, they're often out of date, and they're often just a bunch of binders on the shelf. In a Lean approach, you might update those documents and make sure they reflect reality. The “Checklists” approach (from aviation and now in medicine) emphasizes simple single-page documents that have just the “key points” (to use a word from the Training Within Industry approach) – the important things that shouldn't be forgotten, due to the impact on the patients.



Instead of huge documents, you might also create guidelines — rules of thumb, even — that might be documented in a simple way. I think standardized work is about three questions: 1. Who does what? 2. When do you do it? 3. How do you do it? The old procedures approach usually focuses very heavily on the detail of #3. The other things are important too — asking the staff to re-evaluate and determine who does what. Should nurses be dragging bags of dirty linens down the hallway? No, they decide that should be done by a tech — and management and the team also make sure that the tech hasn't been overloaded with a 120% job.

It's not about just dumping work on others, it's about making the best of use talent (often, it's scarce talent). When should you do things? Why do the first shift laboratory technologists shut the testing machine down for maintenance at 7 am – a busy time of day when test results are delayed?? Because it's the start of their shift. Habit. If it needs to be done once daily, the team can decide to do it at 10 am, when it's a very slow period. In all of these cases, people should understand why. Why does it matter who does what? Why does it matter when you do it?

Why does it matter how you do it? It's not restrictive or limiting I love the quote from Bill Marriott that says, at the hotel chain, procedures (they don't call it standardized work) don't lead to “mindless conformity” from employees. Standardized work doesn't eliminate the need for judgment, it doesn't mean shut your brain off at the door. From a review of the book: Emerson once disparaged “foolish consistency” as the “hobgoblin of little minds.” But Bill Marriott has not confused mindless conformity with thoughtful standard-setting.

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Consistent systems and procedures are main engines for the company's success – and at the heart of “ Marriott's way”: “ At the most basic level, systems help bring order to the natural messiness of human enterprise. Give 100 people the same task-without providing ground rules-and you'll end up with at least a dozen, if not 100, different results. Try that same experiment with a few thousand people, and you end up with chaos. Efficient systems and clear rules help everyone to deliver a consistent product and service. ” It helps. Procedure manuals don't create good service. Thinking people do.

At Marriott, and Toyota, the idea is to standardize what you can so you can have the mental energy left to focus on UNUSUAL situations and problem solving. Do their manuals cover EVERY situation that could possibly occur? Not possible. As a pilot friend of mine says, “ checklists don't fly the airplane. ” In the Geisinger case, the cardiac surgeons are allowed, of course, to deviate from the standardized method. But they have to be able to articulate and defend a clear medical need. It's not just a matter of you woke up on the wrong side of the world and didn't feel like giving an antibiotic before surgery.

There's a guy who criticizes my advocacy for standardized work because (I think) he assumes that I am advocating “ mindless conformity. ” That's never been the case and if he read my book or really read my blog, he'd have a chance of seeing that. Then again, he makes blind blanket statements like standardized work is always bad for services or lean doesn't work. We agree that the wrong-headed application of the concept is harmful, but he takes it to an extreme that it's always bad because it's sometimes

misapplied... It's not permanent In any Lean setting (and this is true in the checklists approach), standardized work is NEVER permanent.

It's just the best way we know how to do the work today. Even Henry Ford said almost 100 years ago that every process is experimental. Today's standardized work is the basis for tomorrow's kaizen (or continuous improvement). This is clearly taught by Toyota and it's being taught in healthcare. As Toyota teaches – every employee has two jobs: 1. Do the work 2. Improve the work With Lean, we follow a scientific method for improvement – the “ Plan Do Check Act” cycle. You don't beat people up for not following it One final point – what happens when a manager sees somebody not following standardized work?

You don't yell. You don't make a thoughtless remark that pressures them into conforming. You don't make a face that says “ what's wrong with you? ” The best thin you can do — ask WHY? Maybe there's a good reason (and that's OK). Maybe the employee doesn't understand the standardized work and they need more coaching – be a coach, not a cop. Maybe the person is experimenting with a new, better way. If you force blind conformity, you'll kill kaizen. Your organization starts to die. Back in my days at GM, the UAW guys had a term — “ malicious obedience. Managers yelled at them and told them to follow orders, to not think. The workers said, “ OK” and did things that were often bad for the product quality because the bosses told them to. And you wonder why GM had such problems? We don't want hospitals, or other organizations going down the Lean path, to have such problems. Thanks for reading – thought on any of the points? This post will evolve over time as I better document some of the references, particularly to the Toyota source <https://assignbuster.com/standardize-work-assignment/>

material that I don't have right in front of me. If you agree with these points, which ones do you see violated most often?

About LeanBlog. org: Mark Graban is a consultant, author, and speaker in the “ lean healthcare” methodology, focused on improving quality and patient safety, improving access, reducing costs, and fully engaging healthcare professionals. He is also the Chief Improvement Officer for KaiNexus.

[http://ezinearticles.com/? Standardized-Work—The-Power-of-](http://ezinearticles.com/? Standardized-Work—The-Power-of-Consistency&id= 944655)

Consistency&id= 944655 One of the most important tools of lean manufacturing is standardized work. When starting a 5S program, the cleaning, organizing, and developing of sustainable practices is done so the elements of work can be standardized.

In lean product development deployments, by developing and releasing design guidelines, we are in effect implementing standardized work for engineers. The principles of lean and flow production do not work well when everyone is allowed to choose the method or sequence in which to do the job; quality suffers, and productivity drops. This reduces throughput and the carefully developed production system develops unanticipated bottlenecks.

Standardized Work: The Principles Standardized work is a detailed, documented and visual system by which associates develop and follow a series of predefined process steps.

It should be used whenever the work requires completing a series of tasks. Production workers, shipping departments, and warehousing teams all can benefit from implementing standardized work. The detailed process steps which we call standardized work represent the current best practices for

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workers to follow in the completion of their jobs. They are designed to minimize process variation introduced by the worker and to eliminate unnecessary motion. This reduces waste, eases problem solving and enhances productivity within a particular job or set of jobs.

Without standardized work, continuous improvement activities are not manageable because processes which are in a constant state of change cannot be improved. Detailed understanding of the steps needed to be taken to complete tasks is necessary to eliminate root causes and permanently resolve issues. When workers utilize various methods to complete their work, it is not possible to develop this understanding. Therefore, standardized work provides the baseline required for continuous improvement. Like everything in lean manufacturing, standardized work is focused on what workers need to do to satisfy the customer.

Unlike the routers developed by engineering, which focus on the part and how it is processed, standardized work focuses on the workers and what steps they must take to produce the part. Maintenance and improvement of the standardized work documentation is the responsibility of the work teams. With standardized work implemented, production workers, supervisors, and engineers no longer have to work from memory. The process documentation provides a baseline, a standard which is referenced whenever someone new is trained on the job.

The standard provides consistent training results even if different managers or operators are used to train new workers. The same principles apply even when new operators are not being trained to do the work. Over time,

employees will develop shortcuts to the process, sometimes developing bad habits. But with the baseline of standardized work, it becomes straightforward and easy to complete regular process audits, following up by re-instructing workers on the proper and desired techniques or perhaps institutionalizing the improvement workers have developed.

Standardized Work: The Elements 1. Takt Time – The Demand Rate of Production. “Takt” is a German word which refers to the pace or drumbeat of a musical composition. Imagine the chaos if each member of a band were to play the music at their own pace. The power of the music would never be realized. Similarly, when production operations do not work at the same pace, chaos ensues. Takt time provides definition to the relationship between work time available and the customer requirements, and enables us to be aware of the time available to complete the job.

It is common to confuse takt time with cycle time, which is the actual elapsed time required to complete a task. However, they are distinctly different concepts, and are not related. Takt time is impacted only by customer demand and the amount of time available for production. When demand rises, takt time drops. When available production time increases, takt time increases as well. 2. Cycle Time – The Production Rate Cycle time tells us how often we can produce the product with current resources and staffing.

This isn't the same as capacity or even detailed process analysis, but an accurate representation of how the line is currently set up to run. Cycle time calculations take into account the entire production quantities. When

multiple lines are producing the same product, then the composite cycle time is less than the actual elapsed time of any individual line. The cycle time is the expected or historically average total production time per unit produced. On an assembly line or in a workcell with multiple operators, each operator will have a time associated with completing the work he is doing.

However, when referring to the cycle time of the line, we are referencing the longest of these individual cycles. To reduce the cycle time of the line, we won't have to revamp the entire line, only the operation which sets the pace. 3. Work Sequence – The Sequence of Tasks Followed to Complete the Job. There is a best method and sequence of process steps to produce any product. Even when the most efficient method is yet to be found, we know it exists and that we can find it. This striving towards perfection is the foundation of lean thinking. Focusing on work sequences is not unique to lean manufacturing.

It has been a key part of manufacturing from the early days of the industrial revolution, and is essential to the development and management of all mass production plants. But lean thinking approaches are different in several ways. • Unlike traditional approaches, the work sequences are focused on the production workers, not the parts. They instruct the operator on exactly what he is to do next, not just which process is to be applied next. • Work sequences are developed by those doing the work. Although it is typical for management or engineering to actually document the process steps, they are developed by the workers.

Engineering, quality, and other functional groups are consulted to ensure the steps will yield the desired results, but the driving force is the production worker.

- Standardized work utilizes visual controls. The sequences are defined primarily by visual images. When done properly, the process should be able to be followed even by someone who does not speak the language well.
- Standardized work sequences are audited. Management communicates commitment and belief in the process by regularly checking to ensure it is being followed.

Standardized Work: The Tools

1. Standardized Work Analysis Sheet – Cell Layout

Organization of the workcell is an important part of the design of a process. When a cell or assembly line starts to degrade or be neglected, one of the initial symptoms is equipment and tools that are not being returned to their proper locations. The cell layout provides the baseline, or standard, for the cell. The team uses it as a reference when organizing or cleaning the work cell. Process audits include checking to ensure that the cell layout is being maintained. When completing cell layouts, it is important to show everything in the workcell in their proper locations.

This includes work tables, staging tables, storage and part racks, equipment locations, pallet locations and tool boxes. When the workcell has a containment area, it should also be shown on the layout.

2. Time Observation

Nearly a century ago, Fredrick Taylor started the practice of time observation when he began using the scientific method to establish time standards in manufacturing. In lean manufacturing, we focus more on system level performance than individual process efficiencies. But the



understanding of work elements and the time required to complete them are an important part of lean manufacturing.

Time balancing processes so that cycle times closely match takt times is essential to eliminating wasted resources. All workers in a cell must have equal or nearly equal amounts of work, or productivity of the line will suffer. When the cycle time of a workcell exceeds the takt time for the cell, then late shipments, shortages, or excessive overtime will result. If the cycle time of the workcell is less than takt time, either overproduction or efficiency reduction will result. Without detailed knowledge of cycle times and set-up or change over times, such process balancing is not possible.

Time observation is the tool that provides the detailed knowledge. While time observation approaches are similar in lean and traditional manufacturing environments, there are significant differences. • Lean manufacturing time observations are conducted to optimize and balance the work within the cell and to aid in the effort to reduce overall lead time – traditional manufacturing uses them to establish time standards. While it is true that lean manufacturing systems sometimes temporarily establish time standards, the overall continuous improvement activities will quickly render such standards obsolete. Lean systems use production workers to conduct the time observations. They aren't conducted by supervisors, manufacturing engineers, industrial engineers, or others who come into the workplace to judge or dictate how team members perform their jobs. • In lean systems, we study the process, never the worker doing the job. 3. Standardized Work Combination Sheet The standardized work combination sheet (SWCS) brings

many of the lean tools together. It is a graphical representation of the process for visual control, emphasizing the work sequences of the operation.

The SWCS brings together all elements of the process, including the time element, and shows the actual sequence of completing the work. It shows the manual work, the automatic or machine work, the walking or non-value added time, and the takt time. It is distinctly different from the work instructions or elements, which define the process methodology. Typically, hand work is denoted by a solid line, machine time by a dotted or dashed line, walk and other non-value added time by a wavy or red line. Takt time is denoted by a vertical, solid line on the right side of the sheet.

In lean operations, we often find cycle clocks which display the elapsed time of the current cycle. Standardized Work Combination Sheets work with these cycle clocks to provide an excellent visual control mechanism. A glance at the SWCS can tell a worker where they should be in the work cycle and allow for proper pacing to stay on schedule. They provide a management tool which easily facilitates auditing of the process. Finally, they are a great aid to workers, especially when operations run close to takt time. 4.

**Operator / Machine Balance Charts** Many work cells and nearly all assembly lines require multiple operations and workers to do a variety of tasks or work sequences to actually produce products. The cycle time of each of these operations can be easily determined using the time observation methods discussed above. The operator / machine balance chart is used to quickly compare the work load on the resources of the work cell to each other and to

takt time. Like the other standardized work tools, it is a visual representation of the process.

The operator balance chart provides a picture of the time required to conduct every operation in the work cell. Balance charts show operations which require more or less time than is available, and also show the relative loading of each operation. To be in balance, the operator / machine balance chart needs to provide nearly equal workload to each operator, and to develop a cycle time which closely matches the cell takt time. A balance chart is a bar chart which shows the time required for each operation in the cell. The value of each bar is the time required for that particular operation.

To be effective, the balance chart must also show takt time, which is represented by a horizontal line on the chart. Any deviation of the operation bars to the takt time line is waste; an opportunity for improvement using lean manufacturing methodologies. You can download templates of these tools from my website at Process Coaching Incorporated. Standardized Work: The Conclusion Standardized work is a foundational element of lean manufacturing methodologies. Without it, the gains made from organizing work cells, creating flow production, and starting continuous improvement teams will only be temporary.

Implementing standardized work is never easy. The detail requirements and information have to be uncovered, revealing questions and new concerns. Time observation is time consuming, and often an unpopular activity on the plant floor. Standardized work activities are never finished. Lean manufacturing strives, but never achieves perfection, and with every new

step towards perfection, the standardized work changes. But the hard work and the constant striving to improve are worthwhile. Improved quality, productivity, safety and customer satisfaction is the reward.

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Standardized Work in Toyota Production System Filed under: Toyota Production System — Tags: Lean production system, standardized production capacity sheet, standardized work, standardized work chart, standardized work combination sheet, toyota production system — Nameer @ 7: 26 pm The foundation of the everyday operation in Toyota Production System is Standardized Work, standardized procedures that regulate every single work step in the entire process of producing an automobile.

Concentrating on human movements, Standardized Work sets up the best work sequence for each manufacturing and assembling process. Once the most efficient sequence has been determined, it is always repeated in exactly the same way, thereby avoiding unnecessary motion and wasted effort, maintaining quality, assuring safety, and preventing damage.

Standardized work establishes guidelines for three central elements of a <https://assignbuster.com/standardize-work-assignment/>

manned work process: 1. Takt Time 2. Working Sequence, and 3. Standard In-Process Stock

Takt Time tells the amount of time within which a given job is to be completed; the working sequence defines the step-by-step order in which each processing or assembly operation is to be performed; and standard in-process stock specifies the number of parts that should be in-process at any given time. This information is available in the form of three standardized worksheets. By looking at these sheets, visible at each worksites, anyone can see at a glance whether or not standardized work is being followed.

Work is not considered standard unless the necessary information is put into written form on these sheets: 1. Standardized Production Capacity Sheet 2. Standardized Work Combination Sheet 3. Standardized Work Chart The standardized Production Capacity Sheet specifies the maximum production volume that each machine of a certain process is capable of achieving, useful information in identifying production bottlenecks. The Standardized Work Combination Sheet shows at a glance the flow of human work steps of single work process, and for each step, useful tool for allocating manpower.

The Standardized Work Chart is a diagram indicating the work sequence for one employee and includes the other two elements that make up Toyota Standardized Work: Takt Time and Standardized Work Charts are posted at each work-site for easy reference and are important and frequently used tool for work-site management. The most significant aspect of Work Standard is that it is established on-site, at the worksite by very people who follow the

rule after they themselves set them. Each worksite manager is in charge of standardized work for his group.

It is manager or group leader's job to make work assignments based on the monthly production schedule and his group's capacity. Since production changes monthly and Standardized Work is changed to adjust accordingly, employee flexibility is a necessity. Multifunction worker development is important—every worker must know, at least, how to do the jobs directly before and after his own. No matter how carefully work sequences are set, problems will crop up suggesting room for improvement. At Toyota, Group Leaders, with their member's help, are free to