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Clean House With Lean 5S

by **Christopher D. Chapman**

Television shows exploring the virtues of better living through organization are ubiquitous. On such popular shows as “Mission Organization” (Home & Garden Television), “Life Simplified” (Fine Living) and “Clean Sweep” (TLC), for example, homeowners and a team of organization professionals clean up homes, get rid of junk that has accumulated over the years, spruce up and

organize to simplify lives and allow people to make more efficient use of their time.

Before the homeowners get organized, their lives are characterized by undue complications and hassles—they are constantly searching for such things as misplaced keys, paying late fees because they misplaced bills, running late because their children cannot find their homework or tripping over toys that were not put away.

Similar types of organization problems that rob us of valuable time at home exist in the workplace. Such problems are exacerbated in business because there are larger numbers of people working together and countless hours of time engaged in these very costly nonvalue adding activities.

In manufacturing, employees are searching for misplaced tooling and components, obsolete parts litter the production floor, supervisors spend hours looking for work in process (WIP) amid a sea of incomplete orders scattered throughout the shop, and nonconforming products are mixed with good parts and are inadvertently sent to customers.

Administrative work environments are not immune to this lack of organization. Administrative personnel waste precious time searching for misplaced files in cluttered filing systems and offices, sifting through piles of paperwork on their desks and inboxes looking for specific documentation or scouring through myriad outdated e-mails.

In 50 Words Or Less

- **A 5S system (sort, set in order, shine, standardize and sustain) creates a disciplined, clean and well-ordered work environment.**
- **Many organizations implement only the first three steps and then wonder why the system doesn't work.**
- **Lack of a robust 5S system makes other lean tools ineffective.**

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HIDDEN FACTORY. Here is a workplace where status of operation is not apparent and where wastes (transportation, inventory, motion, waiting, overproduction, overprocessing and defects) are prevalent.

These day-to-day workplace organization issues manifest into bigger problems such as:

- Longer lead times.
- Low productivity.
- Higher operating costs.
- Late deliveries.
- Ergonomic challenges.
- Space constraints.
- Frequent equipment breakdowns.
- Hidden safety hazards.

The 5S System

The systematic corrective action to this problem is to clean up, get organized and make this the way you do business. In other words, it is time to implement 5S:

1. Sort.
2. Set in order.
3. Shine.

4. Standardize.
5. Sustain.¹

5S is systematic and organic to lean production, a business system for organizing and managing manufacturing operations that requires less human effort, space, capital and time to make products with fewer defects. It creates a work environment that is disciplined, clean and well ordered.

This “there is a place for everything and everything is in its place” type of organization, characteristic of companies such as Toyota, the pioneer of lean production, exposes inefficiencies and disruptions in workflow so these problems are no longer hidden and can be solved.

When 5S is properly implemented, it creates a visual factory that allows for quick determination of the workplace status. At a glance, managers and supervisors can see when things are out of order, production has fallen behind or stalled,



VISUAL FACTORY: This workplace tells us where things are, where things don't belong and what needs to be done, by when, in what quantity, by whom and how.

or WIP is not where it should be.

In his book *Gemba Kaizen*, Masaaki Imai said, "As a general rule of thumb, introducing good workplace organization reduces process defects by 50%."² This is why 5S is so important. It lays the foundation for your company's overall lean production system.

Sort. The first step, sort, requires employees to winnow out what is not needed in the workspace to perform the work.

Valuable workspace can be freed up by clearing out the clutter—parts, WIP, scrap, documents, packaging material, tools, machinery, equipment and miscellaneous items. Some of this material is needed to meet production objectives, but much of it is not. Piles of extraneous items accumulate and impede the flow of work.

According to Pascal Dennis, the cost of this lack of workplace organization is increased hassles and chronically extended lead times.³

Set in order. Employees organize what essential materials are left to minimize wasted employee motion, walking and material movement.

"A place for everything and everything is in its place" includes the placement of such things as machines, tools, storage areas and files. The location should be clear so anyone—including work teams, support personnel and new hires—can find anything at any time, and out of standard situations are obvious to everyone.

Creating this kind of visual shop floor will create an environment that talks to you without verbal communications.

Shine. The shine (and inspect) step focuses on cleanliness. Teams target specific areas to clean, determine how to clean and who will do the cleaning. They define the standards of cleanliness.

Cleaning targets include storage areas, equipment and machinery, and surroundings (for example,

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aisles, under chairs and under desks). While employees are cleaning, they should also check the condition of their equipment to identify early warning signs of unplanned breakdowns.

Standardize. In the standardize step, centralized 5S stations should be set up. These should contain the appropriate supplies such as brooms, mops, wiping rags, labels and tape for color coding—whatever is needed to maintain the workplace organization and visual systems. Ideally, employees can quickly access these supplies when needed.

The 5S System

5S workplace organization

Standards

Sort
Set in order

Sort needed and unneeded items.
Put things in proper place and arrange.

Shine
Standardize
Sustain

Clean up the workplace.
Standardize the first three S's.
Make 5S a part of the job.

Management needs to create a 5S improvement time policy that clearly defines how much time is allocated to maintain 5S on a regular basis. Many companies simply allocate a few minutes at the end of the shift every day for each employee to complete his or her assigned task. As part of a visual factory, a cleaning checklist outlining responsibilities and schedules should be posted.

Sustain. In sustain, the fifth and final step, the team takes steps to ensure 5S develops deep roots in the company and becomes the normal way of doing business.

Involvement is the key. Sustain is best established when the involvement is multilevel—in addition to the shop floor personnel performing the day-to-day

maintenance of the organization systems, management needs to get involved in 5S auditing, verifying compliance, providing feedback on performance to 5S goals and actively participating in 5S improvement implementation events (called *kaizens*), which span several days to blitz a work area.

Foundation for Lean

Most companies approach workplace organization in the same way many homeowners do. They clean up and organize only when they have guests coming or during their annual spring cleaning.

They never realize the day-to-day benefits of 5S: less searching, decreased walking and motion, reduced downtime, fewer safety hazards and accidents, improved flow, fewer mistakes and better utilization of space. These daily benefits add up to yearly improvements in productivity, quality, cost, delivery, safety and morale.

To successfully implement other lean tools such as standardized work, visual inventory replenishment systems, total productive maintenance, setup reduction and mistake proofing, an organization will need to address the workplace issues that perpetuate waste in everything they do.

In a disorganized work environment, in fact, the lack of a robust 5S system will render these other lean tools ineffective. For example, operators will find it difficult to repeat standardized work to meet customer demand.

Furthermore, equipment setup times can often be drastically reduced by implementing 5S. Valuable time is lost simply searching and gathering the tools and supplies needed to perform the setup. In my experience, it is not unusual to realize as much as 30% reduction in setup time after applying 5S to a particular setup.

5S is also a crucial part of total productive maintenance. While operators are doing the cleaning they should also inspect the equipment—listening and watching for anomalies and taking action before a breakdown occurs.

In mistake proofing, when you examine various ways to make it easy to do things right, you apply 5S, color codes and visual symbols. When implementing visual inventory replenishment systems such as *kanban* pull systems (standard inventory systems to supply downstream processes), 5S aids in organizing and simplifying the management of



the physical inventory. Proper organization will ensure minimal material handling by using point of use storage where applicable and visual replenishment signals.

For these reasons, many companies have taken the approach I recommend by implementing 5S prior to rolling out other lean tools. All employees can embrace this tool and begin to benefit from it immediately. A 5S system is an integral part of all lean tools.

Making 5S work

Many companies will embark on implementing 5S only to do the first three S's: sort, set in order and shine. Some rationalize that after cleaning up and organizing, employees will simply fall in line and sustain the visual factory on their own.

I have witnessed company after company comment they tried 5S in the past and it did not work for them. Further investigation uncovered a consistent root cause for their failure. They did not formalize the last two S's: standardize and sustain. They called the initiative 5S when, in fact, it was really only 3S.

Successful implementation of the last two S's of 5S will determine whether you are able to transform your operations from a hidden factory of waste—affecting transportation, inventory and motion and resulting in waiting, overprocessing, overproduction and defects—to a visual factory where the environment is self-explaining, self-ordering and self-improving.

In a visual workplace, the out of standard situation is immediately obvious and employees can easily correct it. Managing thus, on the basis of exceptions, makes operation excellence possible.⁴

Once the sort, set in order and shine has been completed, it is important to define the expectations and post the responsibilities and schedules. The team should also write an improvement time policy that clearly defines how much time is allocated to maintain 5S on a regular basis, for example:

- Commit five minutes at the end of the shift to hand over the work area in good condition to the next shift.
- Post check sheets that clearly communicate what to clean and inspect, how to clean and inspect, who is responsible and the frequency of checks.

Using these standards, supervision and management can check performance and identify infractions. Conduct 5S audits frequently, perhaps weekly, to measure the overall system condition.

As 5S becomes more ingrained into the culture and the number of infractions decrease over time, thus improving the 5S score, management may consider decreasing the frequency of the audits. Use the results of the 5S audit to determine the frequency.

They did not formalize the last two S's: standardize and sustain. They called the initiative 5S when, in fact, it was really only 3S.

The 5S score should be posted in the work area and reviewed by the team for continuous improvement opportunities to be addressed before the next audit. This audit schedule should also be standardized.

Sustain is really the transformational step that makes 5S the normal way of doing business. This integral step requires the involvement of all employees.

In addition to the employees doing the day-to-day maintenance of 5S, a designated management champion should be responsible for visibly supporting the process, providing top management feedback and going to bat for 5S if needed.

Top management involvement is key and can be accomplished by instituting walk arounds and observations or audits as practical means for management to regularly and visibly participate in the implementation and provide concrete feedback.

Organizations should also consider engaging informal shop floor leaders by utilizing 5S coordinators, who are volunteers charged with harmonizing, monitoring and leading implementation. The

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5S system should be incorporated into all functions of the business.

It is time to clean house, and we do not mean lay-offs. We mean 5S!

REFERENCES AND NOTES

1. Originally the 5S's stood for Japanese words: *seiri* (to separate needed tools, parts and instructions from unneeded ones and remove the latter), *seiton* (to neatly arrange and identify parts and tools for ease of use), *seiso* (to conduct a cleanup campaign), *seiketsu* (to conduct *seiri*, *seiton* and *seiso* at frequent intervals to maintain a workplace in perfect condition) and *shitsuke* (to form the habit of always following the first four S's).

2. Masaaki Imai, *Gemba Kaizen: Common Sense, Low Cost Approach to Management*, Reed Business Information Inc., 1997.

3. Pascal Dennis, *Lean Production Simplified: A Plain-Language Guide to the World's Most Powerful Production System*, Productivity Press, 2002.

4. Ibid.

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