

# 5 S's Notes and An Approach

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## 5 S's Notes and approach

What can easily be missed is that the simplicity of the 5 Ss is actually a key strength. Too many companies seek complex systems, possibly to excuse their past negligence. The price of complexity can easily be failure as people struggle not only with the change but also making sense of the new approaches. A critical value of simple systems is that they are relatively easy to understand and implement.

The 5 Ss are described briefly:

Name	Interpretation	Description
<u>Seiri</u>	organisation	Separate out all the things that are not necessary and eliminate them or tidy them away.
<u>Seiton</u>	neatness	Arrange the essential things in order so that they can be quickly and easily accessed and put away.
<u>Seiso</u>	cleaning	Keep machines and working environment clean.
<u>Seiketsu</u>	standardisation	Make cleaning and checking a routine practice; maintain a pleasant environment.
<u>Shitsuke</u>	discipline	Standardise the previous four steps and constantly improve them.

A number of authors have found s-words for the five Japanese words. You can use these if you like, and especially if the Japanese S-words sound too 'technical' for your workforce, although beware of confusion (note how Seiketsu and Shitsuke both get called 'standardise'). These are:

Seiri = sort, structurise, sort out  
Seiton = straighten, systematise, systematic arrangement  
Seiso = scrub, sanitise, spic and span  
Seiketsu = systematise, standardise  
Shitsuke standardise, self-discipline

The 5 Ss are about doing the basics. They provide a foundation on which to build other quality activities. With a tidy, disciplined environment, you can see many of the things which need further attention. Companies that live in chaos, no matter how fashionable it is these days, spend a lot of time in unproductive activities. This is not to say that chaos does not have its place—in creative situations where you want to think out of the box, chaos can be a welcome friend. But the truth of most companies is that a very large proportion of activities could benefit from more control rather than more chaos.

Implementing the 5 Ss requires full cooperation of all involved. This in itself is an amazingly powerful activity. When people realise that these simple activities have such power, and that by implementing them well, the workplace becomes a more pleasant place, the principles will get more enthusiastically embraced.

Although the 5 Ss originated in the manufacturing environment, they translate perfectly well to other work situations, from R&D laboratories to the Managing Director's office. They are every bit as useful for manager as they are for the shop-floor workers. Even at home, life can be made easier and less frustrating, giving the time and space to do all of the other things you wanted to do.

Let's leave the last word to Hiroyuki Hirano, author of 5S: Five Pillars of the Visual Workplace:

"A company that cannot successfully implement the 5 Ss cannot expect to effectively integrate JIT, re-engineering, or any other large-scale change. Good workplaces develop beginning with the 5S's. Bad workplaces fall apart beginning with the 5 Ss."

### **The five Ss: Number 1: Seiri (organisation)**

Seiri means 'organisation' (or, if you prefer s-words, you can use sort, structure or sort-out). It means to put things in order, organising them using specific rules. This means that once you know and have internalised these rules, you will very quickly be able to find the things you want without having to hunt for them every time.

The act of sorting things into groups is called stratification management. You can do it by taking the items themselves or their names written on Post-it Notes, and grouping them into piles, with the general rule that each will be tidied in a similar way or grouped together. For example on the shop floor, spanners could be grouped for a general fitter, although for a specific workstation, tools that are used sequentially would be better put together. An artist's studio might group paints by type or colour. The guiding principle is what will best help them to select when they are needed.

Seiri is not just about tidying things up, it is also about throwing things away, or at least removing the things you need least to a place where you can find them on the occasion you desperately need them (as opposed to rummaging at the bottom of your toolbox or drawer). Putting away those things you are not going to use today also means that the things you are going to use become a lot more visible and easier to find.

Rubbish and junk should be relentlessly rooted out and thrown away. This includes things that have fallen down between desks, old notices on noticeboards, piles of stuff in corners, and so on.

There is a breed of human not unlike the humble squirrel. Their motto is 'Don't throw it away—it might come in useful some day.' They have cupboards and attics so full of junk, they have long forgotten what is at the back, even if they could get to it. Their houses are untidy and they constantly have difficulty in finding things. 'It's around here somewhere' is a common saying.

Sorting out importantly also includes separating broken and worn tools as well as damaged and defective goods that could be mistakenly mixed with operational products.

Where things are becoming untidy, there may be a cause of this. Perhaps someone is not trained or something is leaking. When you are tidying up or organising the workplace, constantly ask, 'How did it get this way?' If you can find the cause, you can address this to prevent the problem from recurring.

Dirt and grime is a part of untidiness and should be regularly cleaned away. Where dirt accumulates, especially industrial situations where it can really pile up, block machines and so on, a close analysis should be performed to identify its causes. Where things leak, rather than just installing an oil pan or other quick fix, find out how to properly seal the systems so there are no leaks at all.

An important part of Seiri is people taking personal responsibility for tidying up. Where there is litter, it gets picked up. After a tool is used, it is put in its proper place. It is not difficult, especially when basic habits have been formed. An annual organised 'spring cleaning' can also help, to root out things which have accumulated.

Seiri is just as applicable in computers as with physical things. You can put an awful lot on a 40 GB disc and if you do not organise it well, it is very easy to lose thousands of pages of

information. In the office, too, you can almost invariably better organise your desk, throwing away unused things, and putting less frequently used things out of the way.

### **The five Ss: Number 2: Seiton (neatness)**

The second S is Seiton, meaning 'neatness'. Where Seiri includes getting rid of the things that you do not need, Seiton follows closely on by ensuring what you leave is tidy and available where and when you need it.

Seiton means tidily putting things away after you have used them. Putting things away requires following three rules: Decide where things belong; Decide how things should be put away; Follow the put-away rules to leave things where they can be quickly and properly found next time they are needed.

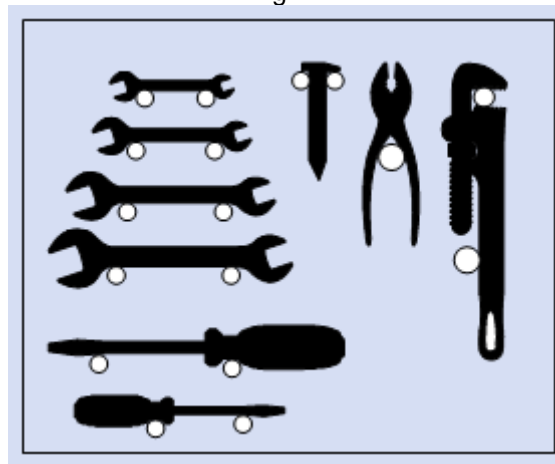
To set up the put-away rules, do an analysis of how the things are used. Pay particular attention to when and how they are picked up and used. This is a primary driver of how and where they are put away. If something is used 50 times a day, then this multiplies the time wasted in finding the item and taking it to where it is to be used.

Where confusion exists about the item, then it should be identified in some way. For example, when selecting one of a set of spanners, if each spanner is uniquely marked, for example with standardised numbers or colours, then mistakes and consequent wasted time can be eliminated.

Labeling and naming should be similarly standardised. Decide whether you will call a tool a nutspinner or a hex spanner. Write labels and other signs clearly so it can be read at an appropriate distance. Ensure the naming cannot get lost, for example by using paint rather than paper labels that can fall off or wear away. If a label is to be changed, then use an appropriate fixing system that holds the label firmly in place for the duration, yet allows it to be easily removed and replaced. For example if a sign is permanent, then screws are appropriate. If, however, it is to be changed each week, then clips or a slotted holder would be better.

Make the item and the storage location match, for example by writing the same name on the item and the storage. The tool board, as in Fig. 1, provides a mechanism to store tools by painting their outline. This allows each tool to be found instantaneously and also highlights when a tool is missing. Storage locations for delicate items can be carved out of foam, such as in a camera case. This also can be used to protect items which are to be transported around the place.

Fig. 1.



Marks and signs on walls and floors can be used to indicate walkways, storage areas, special usages and so on. Areas of floor and complete areas can be painted different colours to indicate

different items, such as hazardous areas, rest areas, fork-lift pathways and so on.

Wires get tangled and difficult to find in buried ducts, they get tripped over or damaged when loose or stapled on floors. The best place can be in overhead channeling.

Make sure storage is safe, both protecting the item being stored and preventing people from harming themselves when storing and retrieving. Ensure there are no sharp corners and minimize stooping and lifting. Beware of making storage cupboards unstable by putting heavy items at the top. If necessary provide transport for heavy items, even storing them on a trolley.

Even when you put things down on a workbench, think about the storage aspects. A delicate gauge is better put on a rubber mat than a steel surface.

The put-away rules should also include instructions on cleaning. Stored tools should be clean and free from any hazardous materials (as should storage places). Damaged tools should not be put back: they should be labeled and put in a designated area.

Balance the storage space with the things needing storing. Unused storage is wastage. But neither cram things together so much you make it difficult or hazardous to retrieve or where the items can damage one another.

Consider what will happen if you go to get something and it is not there. If it is critical, then you will need access to backup items, whether it is in another store cupboard or can be rapidly purchased from a supplier. If two people use the same tool, use the analysis to determine whether to purchase more items or have one person wait.

You can even get creative about storage, such as pressing a button to have a light come on over the tool you need. Computerised storage can go even further, bringing the items you want directly to your hand.

You may have noticed that Seiton is closely related to Seiri. Being organised and being neat go together. This is characteristic of all five Ss: they overlap significantly rather than cover very different subjects. Rather than worry about what fits into Seiri and what fits into Seiton, use them to reinforce each other and implement the whole thing.

### **The five Ss: Number 3: Seiso (cleaning)**

We have already covered the first two of the five Ss. Seiri, or organisation, is primarily about putting things away that are not needed. Seiton, or neatness, then takes those things which are being used and makes sure they are put away tidily so they are always to hand when they are needed.

It is easy in the current age to think that cleaning things is somebody else's job. This can become an attitude that makes people think that keeping things clean is beneath them. They will walk past litter on the floor and not clean down dirty or grimy tools and machinery. Seiso, cleanliness, is an attitude that considers dirty and untidiness as intolerable. Train people in this. Make it a cultural necessity. Give them specific responsibilities. Rotate responsibilities as necessary.

Dirtiness is related to many problems. Dirt both causes and covers up scratches. It hides hazardous areas. It can be hazardous itself. It can be poisonous; it can cause accidents, such as when people slip on it.

There are three broad levels of cleaning. First, there is the overall cleaning of everything. Secondly, there is the cleaning of specific items, tools, machines and workplaces. Thirdly, there is the cleaning at the detail level, getting to grime in screw threads, corners and crevices.

To clean a whole area, first divide it into sections and allocate responsibility to each. Then identify

what is to be cleaned and in what order to clean things. Identify proper methods and tools for cleaning, including brushes, solvents and so on. Also include proper protection for the person doing the cleaning, such as gloves, face-masks and overalls. Then perform the cleaning. Then think about how you can do it better next time.

Cleaning without care can cause more damage than it prevents. For example wiping down a soft surface on which there is hard waste will scratch the surface. Use the appropriate tools to ensure this type of error does not happen. Use vacuum cleaners, soft cloths, cleaning agents, and so on.

When cleaning is completed, use Seiton (neatness) principles to put away the cleaning tools. They themselves may require cleaning, for example shaking out of cloths (in an appropriate place), cleaning of vacuums. Where disposal is involved, ensure this is done properly. For example a cloth containing a hazardous solvent should not be put in the litter bin.

Standardise the approaches you use (Seiketsu). Use diagrams, checklists and charts to help ensure things are cleaned properly. Standardise the cleaning. Train people how to do it. It may seem simple, but with proper training it will be done twice as well in half the time.

When cleaning, always look for the reasons why the item got dirty. Is it leakage from something? Is it untidiness? Are things properly disposed of when they are no longer needed? Seek out the root causes of grime and dirt and eliminate them. If it is dirt in the air, check the ventilation systems—can you add filters?

Seiso cleaning is more than just cleaning—it is also inspection. Whilst something is being cleaned, you should also be inspecting it, looking for damage, defects and potential problems. Other tests can be carried out at the same time to ensure it is in perfect order. For example, whilst cleaning an engine, the oil levels and oil cleanliness can be checked.

Seiso can also include preventive maintenance that ensures things do not fail during normal operation. For example tightening up of hydraulic hoses to prevent leaks, checking and sharpening of tools and so on.

You can also use the time spent cleaning an item to think about how it can be improved. Look for ways to prevent grime build-up. Spot how it gets damaged and find ways of eliminating this. The perfect item can be cleaned in a single wipe. Or maybe it could clean itself?

Seiso in the office or laboratory is similar to Seiso in the factory. Make sure things are clean. Look for hazard. The same is true in computers. Defragment the hard disk. Clean the circuit boards inside. Clean out the junk and you will be able to see what is really there. There may be less opportunity, but the thinking, the mental discipline is very important. An attitude of cleanliness leads to clean and clear thinking that reflects in all aspects of your work.

#### **The five Ss: Number 4: Seiketsu (standardization)**

Seiri is organization, which includes putting away things away that are not needed and keeping close those that are used often. Seiton, or neatness, ensures that the things you use are tidily put away so they can be quickly and easily retrieved. Seiso is not just cleaning, but a whole attitude that includes ensuring everything is in perfect condition.

The fourth S is Seiketsu, which means 'standardization'. This cuts across Seiri, Seiton and Seiso, stitching them together and ensuring that all techniques and methods are clear and well-understood by all.

As humans, we have a tendency to personalise the things we use. When we change them 'to suit our special needs' we are really doing two things. In changing them, we are saying 'this is me', in the same way we will re-decorate a new house so it feels more like ours. By doing this, we are

also shutting out other people, in effect saying 'You are not like me. I am special.'

There are places for individuality in the workplace, but in the methods, tools and processes we must share with other people, we must forego our personalisation tendencies in favour of helping each other understand things, sharing a common view. If we can do this, we build a greater sense of community and feel more a part of the larger group. Paradoxically, studies have shown that people who can let go of their sense of self are actually happier. The unhappiest people are almost invariably also the most selfish.

For everyone to understand a standardised system, they should be trained on it, and perhaps regularly tested to ensure adequate understanding. The design of the system should ease learning. It is very easy to design complex systems that are difficult to learn and remember. Include testing of any standardised system in the same way that you would test a new product with its intended customers.

A particular technique of Seiketsu is visual management. Our vision is our most complex and dominant sense, and visual management plays directly to this strength. Consider what we can see: location, distance, shape, brightness, colour, contrast. Visual management leverages all of these so that when we are looking for something it stands out. Try this: think of the color red. Now look around you and see how red things jump out at you.

Colour systems should employ high contrast. Thus yellow and blue go well together, for example with blue lettering on a yellow background. Blue and green do not have enough contrast and signs using these will be difficult to read. Red and yellow tend to be more 'forward' colours, whilst blue and green tend to fade more into the background. So reserve the red end of the spectrum to make things stand out. 'Red for danger' is probably no coincidence.

Where painting signs and so on, do so neatly (Seiton), using masking tape and stencils to guide the brush. Use the right paint for the surface you are painting. Floors, for example, need special paint. Use standard fonts and font sizes and standard colours.

Colours can be used on people, too, with different coloured overall, hard hats, badges and so on to indicate job function or position. This, for example, will allow you to stand in the middle of the floor and see where the electricians are working. It also makes clear when someone is doing a job which they are not qualified to do.

Visual controls include work instructions, hazard warnings, indicators of where things are kept, equipment and tool designations, cautions and reminders, and plans and indicators of what happens when. Whenever people need reminding, a visual control should be there to help them. Labels should be used to show such as degree of precision of tools, types of chemicals and oils, when machines were last inspected (and when the next is due), temperature tolerances, responsibilities, and so on.

Uses colour in the office, too, to help identify things. Use coloured binders, tags, document holders, papers, Post-it Notes, and so on, each colour having a standardised meaning. You can also use coloured tape or paint marks to indicate pencil types, contents of drawers, etc.

Knowing where to look is the first step of standardisation. You should be able to turn your head or hand and go straight to where things you need are kept, whether it is in a store cupboard, on a rack or in a computer. Signs on the items to be looked at should be clear and visible, even from a distance, if people will be looking for them from a long way off. Use hanging signs, large lettering, colour-coding and so on.

The next step is being able to find the specific item you are looking for. If I am looking for a 6mm wrench, it should be clearly labeled as such and on the proper hanger. If I want a spectrum analyser, it should be on the shelf in its correct place, with appropriate labels.

Signs and indicators should not only tell people what is right, they should also indicate if it is wrong. A spanner rack may include a notice: 'Do not use on older imperial systems'. Mark valves with arrows to show the direction to turn. Clearly mark 'on' and 'off' positions on switches.

Seiso, cleaning, is important with signs, as well as equipment. A dirty sign is almost as bad as no sign. Also, when signs get chipped or worn, repair the damage.

Standardisation makes abnormalities and unusual situations stand out. If you put a set of cleaning machines in a neat row, with a place for each (as Seiton), then if one is missing it will stand out. Likewise, if inspected parts all have a label placed on them in a standard and visible place, you can easily spot when one is missing and hence has not been tested. Coloured labels also allow such as items which have failed the inspection to stand out.

There is a lot of scope for creativity in standardization, for example in using positioning markers, transparent covers that protect but also give visibility, liquid crystal and other electronic signs that change with changing conditions, arrows to show routes, and so on.

As with all the Ss, Seiketsu requires responsibility. In particular, Seiketsu may have people working full-time in managing standards and ensuring that they are complied with. A standard that is not checked up on is not a standard—it is simply a guideline.

Seiketsu in the office is very important, with such as standardisation of documents, naming conventions, indications of general office supplies, ownership of computers and so on. Although you can get overly-bureaucratic, this should not be used as an excuse for sloppiness. Finding the right balance is a matter of understanding, experimentation and, of course, clear standardization

### **The five Ss: Number 5: Shitsuke (discipline)**

Shitsuke, or discipline, draws together the other four Ss, ensuring they are used properly. Seiri (organization) discipline means regular sorting out that which is not needed immediately or at all and ensuring the 'putting away' rules are valid and used. Seiton, or neatness, discipline ensures that the things that are used are always put away properly so they can be quickly and easily retrieved. Seiso discipline ensures everyone always keeps things clean and that things are in good working order. Seiketsu, or standardisation, is very much a method of discipline, leading to everything being available, visible and clearly labeled.

The problem with people is that we are not perfect. We make mistakes, we forget, we do things incorrectly. We are not, after all, machines. When faced with the multiplicity of tasks in the workplace, we do our best, but the complexity and time pressures are more than we can cope with. We also get stuck in habits which are not helpful with our work. Habits are, however, very useful things, and if we can align them with the work disciplines of the 5 Ss, we can forge them into a complete disciplined approach.

Education is an important method of changing how people think and act. Employees can be trained in following policies and in using tools and processes, making habits of known good practices. Too many companies, however, send people on courses and then never follow up to see whether any value has returned to the workplace. A disciplined education system ensures that learning is applied and delivers true value.

Learning on the job can also be an extremely effective form of education, as the speed of feedback is often much faster and you can see more rapidly the results of ill-discipline. For this to work, however, people must be permitted to make mistakes (but not permitted to keep making the

same mistake). A focus on learning from all experiences is one of the most effective methods of discipline there is.

There are many tools to ensure jobs get done as they should. A simple one is the checklist. With the discipline of ticking off actions that are to be completed, you can guarantee that a job will get done correctly every time.

It is easy to think that discipline means following rules only, and that using your brain is not required. In fact discipline is about thinking every bit as much as it is about doing. Disciplined thinking includes always following up a problem with a causal analysis that identifies root causes that can be eliminated.

Discipline also means using creativity and innovation. This is where you are required to fully use all of your mental powers. Disciplined creativity is more than about standing around dreaming. It includes understanding how creativity actually works and then playing the mind like an instrument. There are many well-defined methods that can enhance people's creative potential. Creativity is not guaranteed and you cannot 'create to order'. You can, however significantly bend probabilities with a disciplined approach.

A common area where failure occurs is in the communication between people. When I intend to communicate something, I have to do it through the limitations of language, which you then have to interpret. This leads to many misunderstandings and problems. Discipline in communication includes utilising clear language and, importantly, checking that people have understood properly (for example by asking them to summarise back to you what you have just said). The use of signs and labels (as in Seiketsu) can provide clear communications where they are needed.

Clear responsibility leads to discipline, just as lack of responsibility leads away from it. If you and I both have responsibility for something, it is easy for both of us to assume that the other person will complete the task. Division of jobs leads clear responsibility, but can also lead to a divided workforce. It is important that everyone feels responsibility for the whole company and for the well-being and success of everyone else.

Managers are particularly important in instilling discipline into the workforce. They can insist that discipline is used. They can schedule reviews and even check that the reviews are effective. They can also empower their subordinates, giving them the authority to decide, for example to shut down a production line when a problem threatens product quality. Discipline can involve hard decisions and a culture of punishment will lead to people who are risk-averse and who will lack the discipline of facing reality, no matter how uncomfortable it is.

Perhaps the most important thing a manager can do to encourage his or her subordinates to take a disciplined approach to work is to model the behaviour that is desired. Your workers will listen to you when you tell them how they should behave, and they will watch carefully to see if you are taking your own medicine. Failure to do so leads to a cynical workforce who will put on a dog and pony show whenever you are around, but who will not take disciplined thinking to heart.