STEPS FOR IMPLEMENTATION OF 5S

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ABSTRACT:

5S is an effective approach for enterprise management. This paper describes the steps undertaken for the implementation of the 5S emphasizing on the benefits to the organisation. Here the steps involved in the implementation from inception to execution have been discussed. A special emphasis has been given on the ways of implementation of each of the 5 S's of 5S.

Keywords **- 5S, PDCA Cycle, Steering Committee, Coordinator, Facilitators.**

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1. INTRODUCTION

One of the most important issues of any organisation is to try to have employees work in a better working environment in order to make them feel good and get more energy to do their projects. By doing so, the company can maximize the profits at the same time. But in practice the employees work in a uncomfortable, dirty, messy environments which are usually full of unused materials. Because of this situation, it is hard to find the appropriate tools which are needed. Difficulties are met when the organisation is doing the project which has a scheduled due date. The organisation then starts looking for a solution to solve the problems, which are caused by the messy environment, for enhancement of human capability and productivity and also to save more money.

To solve the above, in recent years, the practice of 5S is being undertaken by almost all organisations. 5S represents 5 disciplines for maintaining a visual workplace (visual controls and information systems). These are foundational to Kaizen (continuous improvement) and a manufacturing strategy based "Lean Manufacturing" (waste removing) concepts.

Since it was introduced by Takashi Osada in the early 1980s, it is believed that applying the 5S techniques could considerably raise the environmental performance in all fronts of any organisation especially housekeeping, health, safety etc. The 5S is the acronym of five Japanese words which stands for seiri (Sort), seiton (Set in order), seiso (Shine), seiketsu (standardization) and shitsuke (Sustain) (Ho et al., 1995; Ho, 1997; Sui-Pheng and Khoo, 2001). Organizing the 5S team is an important approach in solving many potential problems. In the other hand, the 5S practice is a technique used to establish; maintain quality environment in an organization effectively and promise the employees to be more self-discipline (Ho, 1999a; Pheng, 2001). Moreover, Ho (1999b) found that most of operating companies in Hong Kong has successfully improved quality of product as well as increasing the working life underneath of 5S deployment. The 5S concept is applicable for many industry types or business natures, including service sectors. In their studies, Ho et al. (1995) cited that 5S has a significant contribution to the successful of Total Quality Management (TQM) implementation, for example; in the United Kingdom, there are 205 manufacturing and 106 services companies and 16 leading companies from Japan become an important base in implementing TQM successfully. Researchers (Graban (2008); Wilson (2000); Venkateswaran et al (2011)) have implemented the concept to Healthcare

units and have got excellent results. In their studies, Ho and Fung (1994) stated that 5S is one of the strongest tools for enhancing the success factor of TQM implementation. As supported by Khanna (2009), 5S is the driver for the successful of TQM implementation and other quality tool applications. Furthermore, O'hEocha (2000) confirmed that 5S is an effective technique that can improve housekeeping, environmental performance, as well as safety standards in a systematic way. However, Warwood and Knowles (2004) stated that the implementation of 5S is tended to depend on the stage of the 5S programme. Most Japanese companies claimed that the 5S benefit is not only for improving their physical environment, but also improving their thinking processes as well. So in order to become a World Class, an organisation has to go through a continuous and systematic process to :

• Identify, reduce and eliminate waste

• Enhance teamwork

• Enhance operation effectiveness in a better working environment

• Form the basic advanced model for Productivity and Quality Improvement

2. UNDERSTANDING 5S

5S is a management tool from Japan, that focuses on establishing a quality environment in the organisation, ensuring adherence to standards and in the process, fosters the spirit of continual improvement. It focuses on five management techniques that are the foundation for any organisation's competitive initiative. The 5S's are defined as follows.

I. **Sort (seiri (Say-Le))**

To sort and systematically discard items those are not needed in the workplace

II. **Set in Order (seiton (Say Tun))**

To arrange necessary items in a neat and systematic manner.

III. **Shine (seiso (Say So))**

To clean and inspect the workplace thoroughly.

IV. **Standardise (seiketsu (Say Ket Sue))**

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To maintain a high standard of workplace organisation by keeping everything clean and orderly at all times.

V.   Sustain (shitsuke (Shish-Kay**))**

To train people to practise the 5S system continuously so that it becomes habitual and ingrained in the culture of the organisation.

The 5S concept is easy for everyone to understand because it does not require the understanding of difficult terminologies. Moreover it is simple, driven by logic and natural to human behaviour and most important it is within the reach of all type and size of industry or organisation.

3. BENEFITS OF 5S IMPLEMENTATION

A manufacturing company in UK has claimed that implementation of 5S has resulted in identification and disposal of 9,300 excess file folders in the organisation.

Today, many organisations have implemented the 5S system with astonishing results as there is no other approach for improvement that is simpler or more powerful that can be implemented at very low cost.

Some of the salient benefits are:

• Workplace becomes cleaner and better organised.

• Shopfloor and office operation becomes safer.

• Visible results enhance the generation of more and better ideas.

• Lead-time reduced.

• Changeover time reduced by streamlining operations.

• Breakdowns and minor stops eliminated on production lines.

• Defects reduced by mistake proofing.

• Clear methods and standards are established.

• In-process inventory is reduced.

• Space usage is improved.

• Customer complaints are reduced.

4. INITIATION FOR 5S IMPLEMENTATION

The 5S approach outlined in this paper is a simple and systematic methodology which can be introduced and implemented in any size and type of organisation. In order to start the Step-by-Step Implementation of 5S, each phase must be thoroughly analysed and addressed using the P-D-C-A Cycle approach.

4.1 PLAN

Before going to the implementation phase, training on 5S must be provided for all. Then the 5S Council is required to be formed. The council would set-up 5S zones and also would determine 5S objectives, goals and implementation phases. The action plan is to be then framed and 5S is launched.

4.2 DO

• Sort :

Identification of necessary items is required to be listed.

• Set in Order :

After identifying the necessary items, the necessary arrangement for the same is worked out.

• Shine :

The dirt sources are identified along with its root causes. The necessary action to be taken for elimination of the dirt sources and root causes are then framed.

• Standardise :

After framing the action plan the responsibility assignment is identified and executed. Further actions required to be taken to maintain the desired condition is also framed. The assigned personnel then decide on the periodicity, place and procedure for execution of such actions.

• Sustain :

The training and educating everyone would make everybody understand, obey and practise the rules and procedures. the understanding would help in developing continual efforts in sustaining the desired condition.

4.3 CHECK

The assessment of the extent of implementation can be done by conducting Internal 5S Audit. In order to understand the effect benchmark within the department and with other organisations may be used.

4.4 ACT

For continual improvement, the concerned personnel should develop 5S practices into a habit. Periodically the actual goals should be compared with set goals. In order to motivate people Rewards should be given recognising the efforts of the staff.

Figure 1 illustrates the roadmap for ensuring successful 5S Implementation. There PHASE 1 and 2 are the ENABLERS. PHASE 3 and 4 are the actual RESULTS achieved. After each cycle the phase which require improvement and the approaches to be undertaken has to be reviewed.
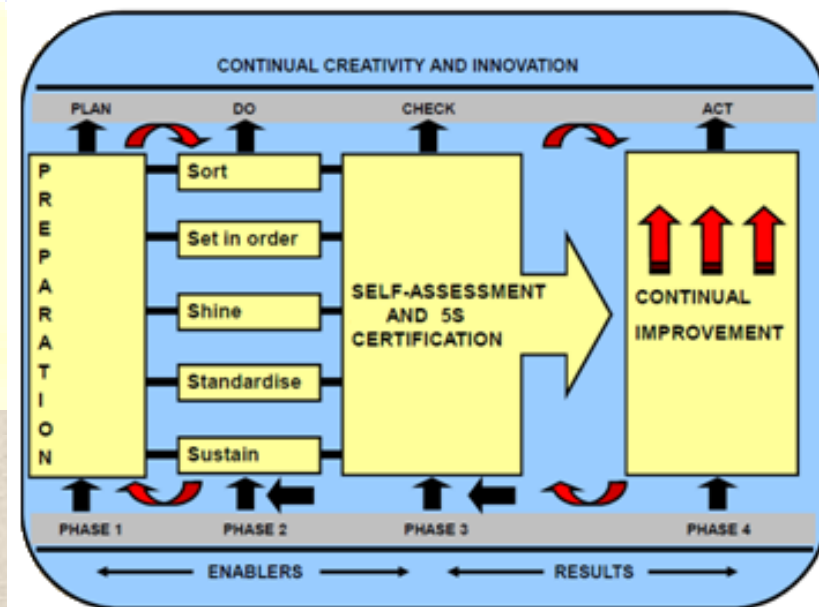
Fig. 1: Roadmap to 5S implementation

5. THE STEP-BY-STEP IMPLEMENTATION OF 5S

5.1 STEP 1 : FORMATION OF 5S COUNCIL

The 5S council is formed with an objective to enhance total participation at all levels of employees and to develop a continuous improvement culture and best performance spirit in the teams. Figure 2 provides a typical organisational structure for the implementation process.
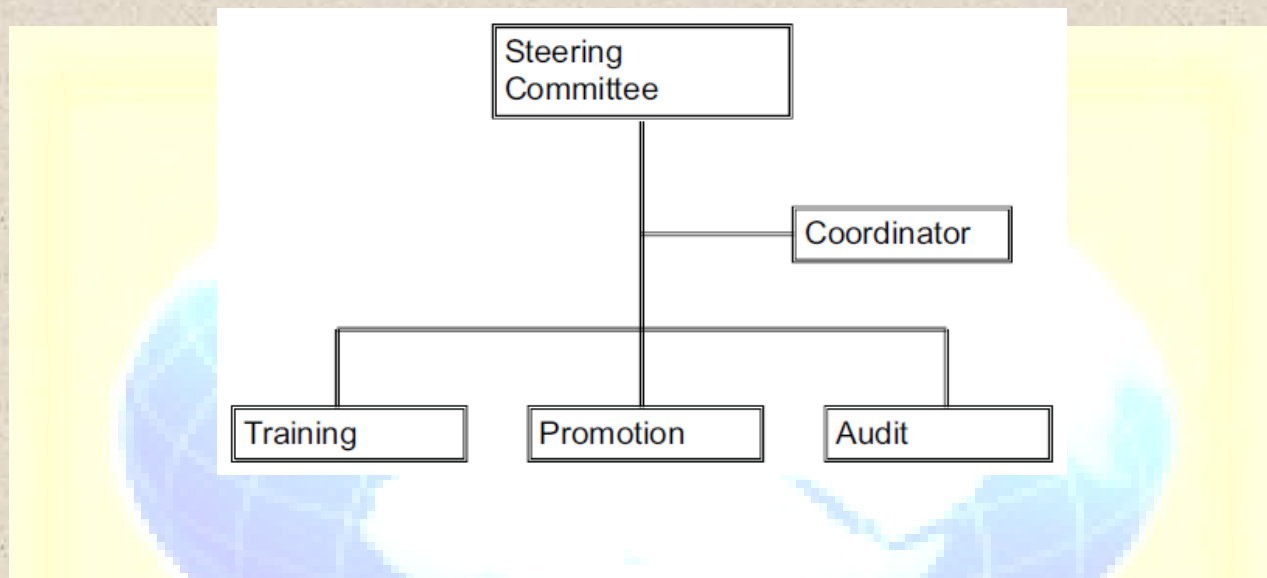

Fig. 2: The structure of Steering Committee for 5S implementation.

5S Steering Committee constitutes of The Managing Director (or head of the organisation) as Advisor, The General Manager (or the second man) as Chairman and the respective Head of Departments as Facilitators. The 5S Steering Committee is responsible for developing the implementation plan, and the selection of team members based on ability, organisational representation and expertise. 5S implementation responsibilities are to be distributed throughout the organisation. Every member must know their 5S responsibilities and perform accordingly. It is the duty of the Chairman to administer accountability for each of the responsibilities. The steering committee is also required to appoint 5S Coordinator, 5S Facilitators and 5S Leader from each department.

5S Coordinator is required to communicate with everyone involved. He is responsible to facilitate work group implementation activities. He is required to motivate and monitor implementation activities ensuring total organisation participation. On behalf of the organisation the coordinator acts as a resource for information.

5S Facilitators supports 5S implementation by communicate with everyone involved, motivating work groups, ensuring employee implementation plan and finally monitoring measurement systems.

5S Leaders participates in work group implementation process by communicating with everyone involved and monitoring progress of group activities.

5.2 STEP 2 : SET-UP 5S ZONES

The 5S Coordinator will be responsible for demarcating the zones. 5S Facilitators will be responsible for assigning responsibilities. They would divide the activities into manageable tasks. This can be done by obtaining the layout of the entire work area and dividing each section into small zones. Then assigning one team to each section and displaying the names of team members of each team and their areas. In doing this they must ensure that at least one person is assigned to each section and there is a leader for every team. Moreover it must be taken care that the section size and team strength are uniform to the extent possible. In case of shared areas, the responsibility should be clearly defined avoiding any ambiguity.

5.3 STEP 3 : 5S TRAINING

The 5S training committee is set up with an objective to disseminate 5S methodology and prepare the workforce for meaningful participation in 5S activities. This training programme, which is the starting point of 5S, encourages workers to become actively involved in the application exercises. Once the preliminary training is completed, everyone will have the required basic knowledge, and be responsible for action in progress. Plans describing implementation of the 5S phases must be prepared and released during the 5S declaration. The most common mistake organisations make when implementing the 5S system, is the failure to train adequately at the outset. Training should

include 5S Awareness (for Top Management), 5S Awareness (for Operators), 5S Implementation (for Facilitators), Internal 5S Audit (For all).

5.4 STEP 4 : 5S DECLARATION / LAUNCH

The main objective here is to announce the promotion plan for the sole purpose of promoting the establishment of 5S activities. At this point, management must endorse the 5S plan, set targets, policy, and goals for the Step-by-Step Implementation. Along with the 5S declaration there should be announcement of 5S Policy, Objectives and Goals, announcement of 5S Zones, announcement of the 5S Slogan.

5.5 STEP 5 : GUIDELINES FOR PRACTISING SORT (1st S)

To implement the first S the Red-Tag process is commonly employed. The Red-Tag strategy helps to identify unwanted items and determine their usefulness. There are six steps involved in creating a successful Red-Tagging process.

    i.   Launch the Red-Tag Project

This is usually done by the 5S Steering Committee by creating holding areas and planning for the disposal of unwanted items using the Red-Tag form.

    ii.   Identify the Red-Tag Targets

Specify the type of items and the physical work areas to be evaluated.

    iii.   Set Red-Tag Criteria

Three questions need to be asked to determine if an item is necessary.

• Is it useful ?

• How often is it needed ?

• How much is needed ?

    iv.   Attach the Tag.

The Red-Tagging event must be quick and decisive. The target scope must be completed before the 5S launch.

v.   Evaluate Red-Tagged Items.

Decide what to throw and the actions required

vi.   Document the Results of Red-Tagging.

Results must be logged for accounting purposes so that the organisation can measure the improvements and savings realised through the process.

When Red-Tagging is completed and action taken as in Figure 3, workflow is reduced, communication between workers is improved and productivity is enhanced (Figure 4).

The key word in this description is the elimination of unnecessary items in the workplace. Sorting is an excellent technique to transform a cluttered workplace layout into an effective area to improve efficiency and safety.
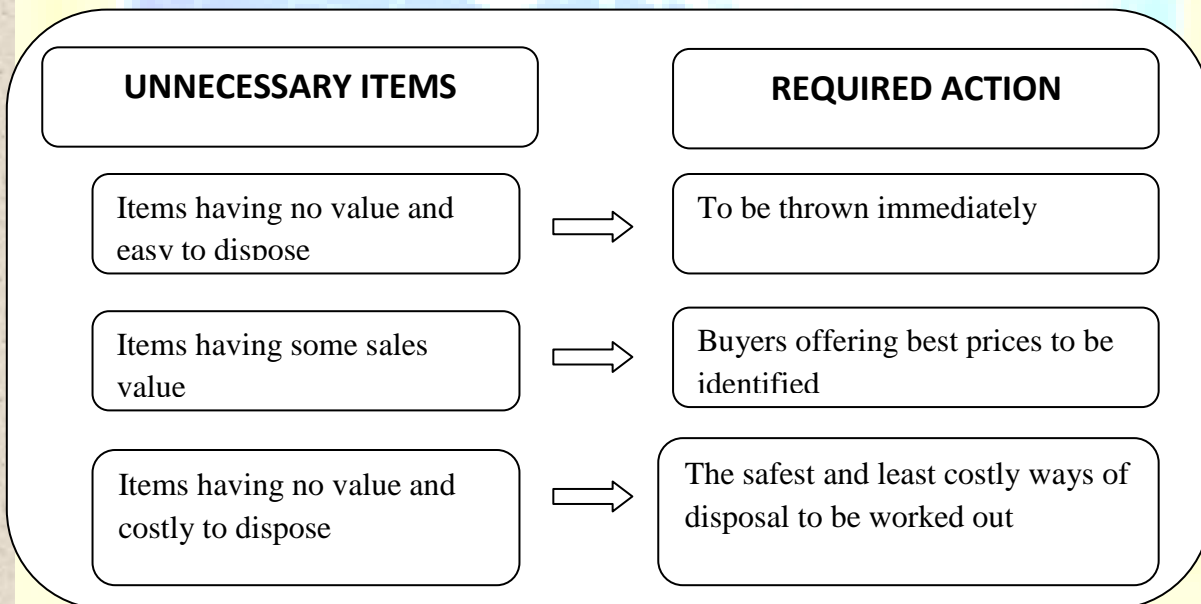
UNNECESSARY ITEMS	REQUIRED ACTION
Items having no value and easy to dispose	To be thrown immediately
Items having some sales value	Buyers offering best prices to be identified
Items having no value and costly to dispose	The safest and least costly ways of disposal to be worked out

Fig.3: First S Action Plan

SORT ⟶ Elimination of unnecessary things or wastes

Eliminate wastes of resources, materials, spaces, shelves, cabinets, etc.
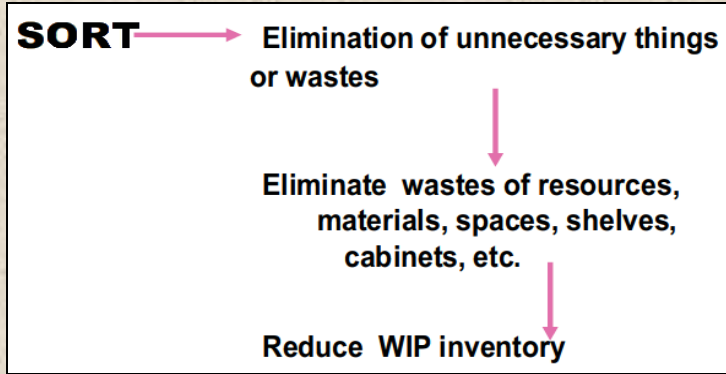
Reduce WIP inventory

Fig. 4: Expected result of 1st S

5.6 STEP 6: GUIDELINES FOR PRACTISING SET IN ORDER (2nd S)

The second S reflects a very popular saying: "A place for everything in it's place". It emphasises safety, efficiency and effective storage and consequently improves the appearance of the workplace.

Once the first S has been successfully implemented, what is left should be arranged so that there is ease of use and storage as illustrated in Figure 5. The process shown in Figure 5, eliminates waste in production or in clerical activities and ensures all materials, tools and equipments have designated locations which are easy to find. Labelling is specifically for other people who need what is in area, when the area owner is away. The benefit is searching time reduced. When orderliness is established, there is no human energy waste or excess inventory.
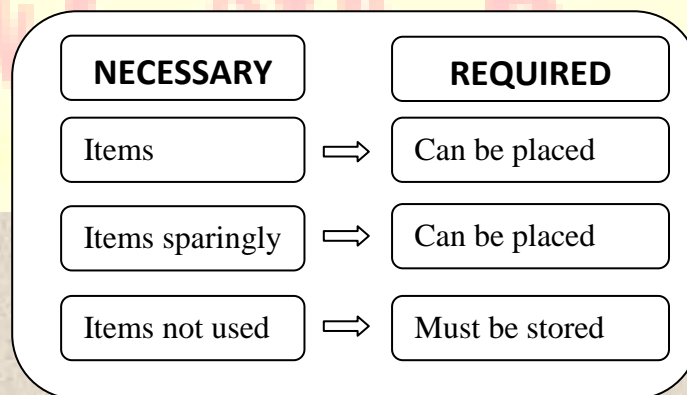
NECESSARY		REQUIRED
Items	⟹	Can be placed
Items sparingly	⟹	Can be placed
Items not used	⟹	Must be stored

Fig.5: Second S Action Plan

5.7 STEP 7: GUIDELINES FOR PRACTISING SHINE (3rd S)

The third S stresses on cleanliness because it ensures a more comfortable and safe workplace, as well as better visibility, which reduces retrieval time and ensures higher quality work, product or service. The third S is to thoroughly clean the work area. Daily follow-up cleaning is absolutely necessary to maintain a clutter-free workplace and a desirable environment. SHINE speaks for itself. Everyone enjoys working in a clean environment which raises morale and increases productivity. This can be achieved by delegating Cleaning Assignments. It must be transmitted that cleanliness is the responsibility of EVERY employee and the workplace must be divided into distinct cleanliness areas, which can be based on 5S Zones, 5S Schedules etc. The facilitators must determine **WHAT** is to be Cleaned, methods to be used, preparation of the Cleaning Tools and Materials and implement cleanliness. The key word should be keeping the workplace and everything in it clean and in good functional condition.

5.8 STEP 8: GUIDELINES FOR PRACTISING STANDARDISE (4th S)

The continue employment of the 3S will ensure a high standard of workplace organisation. Once the 3S are in place, the next step is to concentrate on standardizing best practices. The plant must include the creation of procedures and simple daily checklists which are to be visibly displayed at every workplace. A checklist must be prepared to serve as visual signpost to ensure that the daily 3S requirements are carried out habitually as best practices in the work area.

5.9 STEP 9: GUIDELINES FOR PRACTISING SUSTAIN (5th S)

The fifth S is to make it a habit of maintaining the momentum of the previous four S to ensure sustainability of the system and to make further improvement by encouraging effective use of P-D-C-A Cycle.

This can be achieved by building awareness of the importance of 5S through retraining, reward and recognition of the efforts of staff and use of techniques / approaches / strategies to sustain activities. This S requires self-discipline without which it is impossible to maintain consistent standards of quality, safety and cleanliness.

6. CONCLUSION

The key word in 5S is shared values. Shared values are achieved through coaching and team participation and not by shouting orders and imposing penalties. The implementation of 5S involves coaching to get the workers to do the simple things right. The successful implementation of 5S requires that everyone understand why it is being used and what the expected results are, as the removal of familiar (although unneeded) items and the reorganisation of processes can be extremely unsettling. This may need to be coupled with training in the principles of 5S. Simply implementing SORT can have rapid results that demonstrate a company's commitment to change, whilst the application of the other elements can dramatically improve productivity and reduce both waste and lead time. The use of SORT and SIMPLIFY are excellent methods for involving people very early on in the change process. Often they find the experience to be exciting and fun and in this way it can be used to create a pool of people who are both positive and motivated about change.

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