Ethiopian TVET-System

IT SUPPORT SERVICE LEVEL II

Based on May 2011 Occupational Standards

October, 2019

Module Title: Standardizing and Sustaining 3S

TTLM Code: ICT ITS2TTLM 1019v1

This module includes the following Learning Guides

LG1: Prepare for work

LG Code: ICT ITS2MO1LO1-LG-01

LG2: Standardize 3S

LG Code: ICT ITS2 M02LO2-LG-02

LG3: Sustain 3S

LG Code: ICT ITS2 M01 LO3-LG-03

Instruction Sheet	LG1: Prepare for work

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Using work instructions to determine job requirements.
- Reading and interpreting Job specifications.
- OHS requirements.
- Identifying and checking safety equipment and tools.
- Preparing and using tools and equipment to implement 3S.
- Using Kaizen board properly in accordance the procedure
- Preparing labels and slogans

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Use work instructions to determine job requirements, including method, material and equipment.
- Read and interpret job specifications following working manual.
- Observe OHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs throughout the work.
- Identify and check Safety equipment and tools for safe and effective operation.
- Prepare and use Tools and equipment to implement 3S.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3,Sheet 4, Sheet 5, Sheet 6 and Sheet 7”.
4. Accomplish the “Self-check 1, Self-check 2, Self-check 3, Self-check 4, Self-check 5, Self-check 6 and Self-check 7” in page 5, 7, 13, 19, 23, 26 and 29 respectively.

Information Sheet-1	Using work instructions to determine job requirements

1.1. Introduction

5S is amongst the first and fundamental steps implemented by an enterprise to wards the path of implementing Total Quality Management and continuous improvement at the operation level. 5S is a process designed to organize the workplace, keep it clean, and maintain effective and standard conditions. It instills the discipline required to enableeach individual to achieve and maintain a world-class environment. The use of this tool was started in 1972 by Henry Ford in the United States as the CANDO program: Cleaning up, Arranging, Neatness, Discipline and Ongoing improvement. The technique was popularized as 'Japanese 5S' in 1980 by HiroyukiHirano.

Many enterprises have practiced the 5S and derived significant benefits from it. In particular, this technique has been widely practiced in Japan. Most Japanese 5Spractitioners consider 5S useful not just for improving their physical environment, but also for improving their thinking processes too. In Japan it is also called 'workplacemanagement'.5S will be needed if the workplace is messy and unorganized. It will also be needed if employees spend extra time in searching tools, papers, information, etc.

1.2. What Is 5S?

5S is a method of creating a self-sustaining culture which perpetuates a neat, clean, efficient workplace; a method for removing all excess materials and tools from the workplace and organizing the required items such that they are easy to find, use, and maintain.

The five steps of Japanese 5S are:

1. Sort (Seiri)

- No unnecessary items at the workplace: "When in doubt, throw it out!"

2. Set in Order (Seiton)

- Anyone can instantly find, take, and return any needed item:"A place foreverything, and everything in its place"

3. Shine (Seiso)

- Deviations become visual by cleaning: "Cleaning = inspection;Cleaning with meaning"

4. Standardize (Seiketsu)

- Visualize the 5S standards in the workplace: "Make the best way theeasiest way"

5. Sustain (Shitsuke)

- Everybody follows the standard until we have a better one:"Stick to it!"

1.3. Why do we practice the 5S?

The general concept of the 5S is that they are intended to eliminate waste.Working in disorder is neither productive, nor safe. 5S is a simple and practical method to instill a qualityculture at the work place. It is relatively easy to undertake, and requires minimal additional resources. The firstand small investment made in time and effort pays off in a much bigger manner when the results are realizedand maintained.

Among the main benefits of implementing 5S are:

- The workplace becomes cleaner, safer, well-organized and more pleasant
- Floor space utilization is improved
- Workflow becomes smoother and more systematic and non-value added activities are reduced;
- Time for searching tools, materials and document is minimized;
- Machine breakdowns are reduced since clean and well-maintained equipment breaks down lessfrequently and it also becomes easier to diagnose and repair before breakdowns occur, thereforeextending equipment life;
- Errors are minimized leading to making defect-free products;
- Consumables and material wastage are minimized;
- The morale and satisfaction of employees improves; and
- The productivity of the organization improves together with the quality of products and services.

1.4. Work Instruction

Work instruction is a description of the specific tasks and activities within an organization. A work instruction in a business will generally outline all of the different jobs needed for the operation of the firm in great detail and is a key element to running a business smoothly.In other words it is a document containing detailed instructions that specify exactly what steps to follow to carry out an activity. It contains much more detail than a Procedure and is only created if very detailed instructions are needed. For example, describing precisely how a Request for Change record is created in the Change Management software support tool.

Information about the work

- Describe what workers need to be able to do on the job
  - ✓ Work functions
  - ✓ Key activities of each work function
  - ✓ Performance indicators
- Describe what task to be done or work roles in a certain occupation

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next pag: (5 pts each)

1. Which of the following is not included in the five steps of Japanese 5S?

   A. Sort C. Set-in order

   B. StandardizeD. None

2. Which of the following is not included in the main benefits of implementing 5s?

   A. Floor space utilization is improved

   B. Time for searching tools, materials and document is minimized

   C. Errors are minimized leading to making defect-free products;

   D. Consumables and material wastage are minimized;

   E. None

Note: **Satisfactory rating - 2 points Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet- 2	Reading and interpreting Job specifications.

2.1. Introduction

A successful operation in the hospitality industry requires efficient management of personnel and cooperation between many different skilled professionals. Working in this type of international setting can seem like a puzzle. To make it work, you must not only be familiar with the job specifications for your colleagues, but you must also be very familiar with your suppliers and customers. A job specification describes the knowledge, skills, education, abilities and experience that are essential to a particular job. In short, a job specification describes the exact person that a company requires for a particular role. A job specificationis not identical to a job description. Ajob descriptiondefines the duties and requirements of an employee's job in detail, however most job specificationswill include an overview ofthe duties included in the position.

2.2. Components of a Job Specification

Experience: The number of years of experience you have had in the role in which you desire to fill. A job specification will detail the number of years of work experience a candidate needs in order to successfully fill a position. Positions that require more complex and responsible duties, and supervisory and managerial roles, will always require more work experience.

Education: The training, degrees or certifications required for the position.

Required Skills, Knowledge and Characteristics: This is where the employer states the skills, knowledge and characteristics of other employees who were previously in this position, or what the employer requires to fill the role. Characteristics refer to personality traits that the ideal candidate must possess. These might be patience or leadership, or good time management, flexibility or attention to detail.

Overview of Job Duties: This is where the employer repeats the requirements and activities that the prospective employee must undertake in the position.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. A job specification describes the exact person that a company requires for a particular role.**(True/False)**
2. Which of the following is Components of a Job Specification?

A. Experience B. Education

C. Required Skills, Knowledge and CharacteristicsD. All

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	OHS requirements.

3.1. Introduction

Occupational safety and health (OHS) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. This domain is necessarily vast, encompassing a large number of disciplines and numerous workplace and environmental hazards. A wide range of structures, skills, knowledge and analytical capacities are needed to coordinate and implement all of the "building blocks" that make up national OHS systems so that protection is extended to both workers and the environment.

The scope of occupational safety and health has evolved gradually and continuously in response to social, political, technological and economic changes. In recent years, globalization of the world's economies and its repercussions have been perceived as the greatest force for change in the world of work, and consequently in the scope of occupational safety and health, in both positive and negative ways. Liberalization of world trade, rapid technological progress, significant developments in transport and communication, shifting patterns of employment, changes in work organization practices, the different employment patterns of men and women,and the size, structure and life cycles of enterprises and of new technologies can all generate new types and patterns of hazards, exposures and risks. Demographic changes and population movements, and the consequentpressures on the global environment, can also affect safety and health in theworld of work.

3.2. Core OHS principles

Occupational safety and health is an extensive multidisciplinary field, invariably touching on issues related to scientific areas such as medicine – including physiology and toxicology – ergonomics, physics and chemistry, as well as technology, economics, law and other areas specific to various industries and activities. Despite this variety of concerns and interests, certain basic principles can be identified, including the following:

- All workers have rights. Workers, as well as employers and governments,must ensure that these rights are protected and must strive to establishand maintain decent working conditions and a decent working environment.

  More specifically:

  - ✓ Work should take place in a safe and healthy working environment;
  - ✓ Conditions of work should be consistent with workers' well-beingand human dignity;

- ✓ Work should offer real possibilities for personal achievement, self fulfillment and service to society.

- Occupational safety and health policies must be established. Such policies must be implemented at both the national (governmental) and enterprise levels. They must be effectively communicated to all parties concerned. National system for occupational safety and health must be established. Such a system must include all the mechanisms and elements necessary to build and maintain a preventive safety and health culture. The national system must be maintained, progressively developed and periodically reviewed.
- A national program on occupational safety and health must be formulated. Once formulated, it must be implemented, monitored, evaluated and periodically reviewed.
- Social partners (that is, employers and workers) and other stakeholders must be consulted. This should be done during formulation, implementation and review of all policies, systems and programs.
- Occupational safety and health programs and policies must aim at both prevention and protection. Efforts must be focused above all on primary prevention at the workplace level. Workplaces and working environments should be planned and designed to be safe and healthy. Continuous improvement of occupational safety and health must be promoted. This is necessary to ensure that national laws, regulations and technical standards to prevent occupational injuries, diseases and deaths are adapted periodically to social, technical and scientific progress and other changes in the world of work. It is best done by the development and implementation of a national policy, national system and national program.
- Information is vital for the development and implementation of effective programs and policies. The collection and dissemination of accurate information on hazards and hazardous materials, surveillance of workplaces, monitoring of compliance with policies and good practice ,and other related activities are central to the establishment andenforcement of effective policies.
- Health promotion is a central element of occupational health practice. Effortsmust be made to enhance workers' physical, mental and social well-being.Occupational health services covering all workers should be established.Ideally, all workers in all categories of economic activity should haveaccess to such services, which aim to protect and promote workers'health and improve working conditions.
- Compensation, rehabilitation and curative services must be made availableto workers who suffer occupational injuries, accidents and workrelateddiseases. Action must be taken to minimize the consequences ofoccupational hazards.Education and training are vital components of safe, healthy workingenvironments.Workers and employers

must be made aware of the importanceof establishing safe working procedures and of how to do so. Trainersmust be trained in areas of special relevance to particular industries, sothat they can address the specific occupational safety and health concerns.

- Workers, employers and competent authorities have certain responsibilities,duties and obligations. For example, workersmust follow established safetyprocedures; employers must provide safe workplaces and ensure access tofirst aid; and the competent authorities must devise, communicate andperiodically review and update occupational safety and health policies.
- Policies must be enforced. A system of inspection must be in place tosecure compliance with occupational safety and health measures andother labour legislation.

3.3. Management commitment and resources

While top management has the ultimate responsibility for the safety andhealth program in an enterprise, authority for ensuring safe operation shouldbe delegated to all management levels. Supervisors are obviously the keyindividuals in such a program because they are in constant contact with theemployees. As safety officers, they act in a staff capacity to help administersafety policy, to provide technical information, to help with training and tosupply program material.

Total commitment on the part of management to making safety andhealth a priority is essential to a successful OHS program in the workplace.It is only when management plays a positive role that workers view suchprogram as a worthwhile and sustainable exercise. The boardroom has theinfluence, power and resources to take initiatives and to set the pattern for asafe and healthy working environment.

Management commitment to occupational safety and health may bedemonstrated in various ways, such as:

- Allocating sufficient resources (financial and human) for the properfunctioning of the occupational safety and health program;
- Establishing organizational structures to support managers andemployees in their OSH duties;
- Designating a senior management representative to be responsible foroverseeing the proper functioning of OHS management.

The process of organizing and running an OSH system requiressubstantial capital investment. To manage safety and health efficiently,adequate financial resources must be allocated within business units as part ofoverall running costs. The local management team must understand the valuethat corporate leaders place on providing a safe place of work for employees.

There should be incentives for managers to ensure that resources are deployedfor all aspects of safety and health. The challenge is to institutionalize safetyand health within the planning process. Once the program is under way,concerted efforts must be made to guarantee its sustainability.

3.4. Workers' participation

Cooperation between management and workers or their representativeswithin an enterprise is an essential element of prevention of accidents anddiseases at the workplace. Participation is a fundamental workers' right, and itis also a duty. Employers have various obligations with regard to providing asafe and healthy workplace, and workers should, in the course of performingtheir work, cooperate in order to enable their employer to fulfill thoseobligations. Their representatives in the undertaking must also cooperate withthe employer in the field of occupational safety and health. Employeeparticipation has been identified as a key precondition of successful OHSmanagement and a major contributing factor in the reduction of occupationaldiseases and injuries.The full participation of workers in any OHS programs designed fortheir benefit will not only ensure the efficacy of such measures, but will alsomake it possible to sustain an acceptable level of safety and health at areasonable cost. At the shop-floor level, workers and their representativesshould be enabled to participate in the definition of issues, goals and resultingactions related to occupational safety and health.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. The scope of occupational safety and health has evolved gradually andcontinuously in response to:(5 pts each)

   A. Social B. Political

   C. Technological D. Economic changes E. All

2. Management commitment to occupational safety and health may not be demonstrated in:

   A. Allocating sufficient resources

   B. Establishing organizational structures

   C. Designating a senior management representative

   D. None

3. Occupational safety and health programs and policies must aim at both prevention and protection. **(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet 4	Observing personnel protection

4.1. Overview of Protection

For every tool there is the right job, and for every job there is the right tool. Ensure that you are familiar with the correct use of each tool and that the right tool is used for the current task.

This will reduce the chances of damage or injury. Skilled use of tools and software makes the job less difficult and ensures that tasks are performed properly and safely. The Figure shows a sample tool kit used to install, connect, remove, and repair PC components.
In addition to hardware tools, software tools are also available that help diagnose problems and determine which computer device is not functioning correctly.

4.3.1. Identify Hardware Tools and Their Purpose

A tool kit should contain all the tools necessary to complete hardware repairs. Hardware tools are grouped into the following four categories:

- ✓ ESD tools
- ✓ Hand tools
- ✓ Cleaning tools
- ✓ Diagnostic tools

ESD tools

There are also devices that enable us to protect ESD. These devices include:

A. **Anti-static wristband:** these devices have a strap that you wrap around your wrist or ankle on one end. The other end of the strap is attached computer case to keep ground between the computer and you.

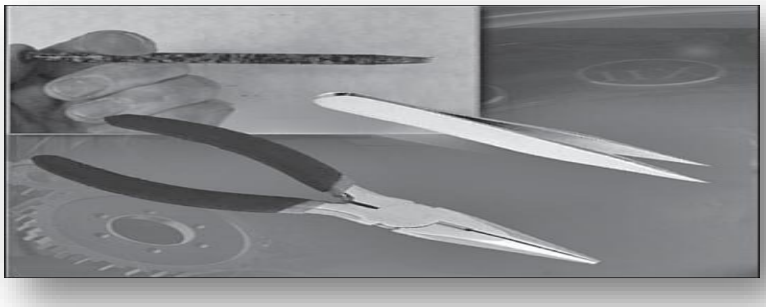
B. **Anti-static mats:** these are mats that you place on the work surface and on the floor in front of work area. They make an excellent place to place your tools and components when you work on a system.

C. **Anti-static bags (pouches):** they have special coating or filament that prevents ESD. They are used to store any sensitive electronic device like cards, RAM, drives, etc when they are not installed in a computer.

Hand Tools

Most tools used in the computer assembly process are small hand tools. The list that follows describes the small hand tools that you will most commonly use:

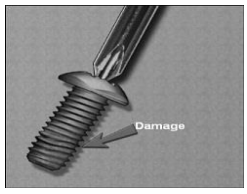
- ✓ ***Flat head screwdriver***: Used to loosen or tighten slotted screws.



- ✓ ***Phillips head screwdriver***: Used to tighten or loosen cross-head screws.

- ✓ ***Torx screwdriver:*** Used to tighten or loosen screws that have a star-like depression on the top, a feature that is mainly found on laptops.
- ✓ ***Hex driver:*** Sometimes called a nut driver, this tool is used to tighten nuts in the same way that a screwdriver tightens screws.

- ✓ ***Needle-nose pliers***: Used to hold small parts.
- ✓ ***Wire cutters:*** Used to strip and cut wires.
- ✓ ***Tweezers***: Used to manipulate small parts.
- ✓ ***Part retriever***: Used to retrieve parts from locations that are too small for your hand tofit in.



- ✓ ***Flashlight***: Used to illuminate areas that you cannot see well.

Cleaning Tools

The appropriate cleaning tools are essential when maintaining or repairing computers. The list that follows describes the cleaning tools that you will most commonly use:

- ✓ **Soft sloth**: Used to clean different computer components without scratching or leaving debris.
- ✓ **Compressed air**: Used to blow away dust and debris from different computer parts without touching the components.
- ✓ **Cable ties**: Used to bundle cables neatly inside and outside of a computer.

Parts organizer: Used to hold screws, jumpers, fasteners, and other small parts to prevent them from getting mixed together.

Diagnostic Tools

To test hardware, you will use the following ***diagnostic tools***:

- ✓ **Digital multimeter**: Used to test the integrity of circuits and the quality of electricity in computer components.
- ✓ **Loopback adapter**: Used to test the basic functionality of computer ports.

Information Sheet-5	Identifying and checking safety equipment and tools

4.1. Introduction

Tools are designed to make a job easier and enableyou to work more efficiently. If they are not properlyused and cared for, their advantages are lost to you.Regardless of the type ofwork to be done, you musthave, choose, and use the correct tools in order to doyour work quickly, accurately, and safely. Without the proper tools and the knowledge of how to use them, you waste time, reduce your efficiency, and may even injure your self.

4.2. Tool Work Habits

"A place for everything and everything in its place "is just good common sense. You can't do an efficient repair job if you have to stop and look around for eachtool you need. The following rules will make your job easier and safer.

1. Keep Each Equipment In Its Proper Storage Place.

The Equipment Control Program is based on the concept of a family of specialized toolboxes and pouches configured for instant inventory before and after each maintenance action. The content and configuration of each container is tailored to the task, work center, and equipment maintained. Work center containers a reassigned to and maintained within a work center. Other boxes and specialized tools are checked out from the tool control center (tool room).

2. Keep Your Equipment In Good Condition.

Protect them from rust, nicks, burrs, and breakage.

3. Keep Your Equipment Allowance Complete.

When you are issued a toolbox, each tool should be placed in it when not in use. When the toolbox is not actually at the work site, it should be locked and stored in a designated area.

NOTE

An inventory list is kept in every toolbox to be checked before and after each job or maintenance action, to ensure that all tools are available to do your work, and to ensure that they are accounted for after you have completed your work.

4. Use Each Equipment Only For The Job It Was Designed To Do.

Each particular type of tool has a specific purpose. If you use the wrong tool when performing maintenance or repairs, you may cause damage to the equipment you're working on or damage the tool itself. Remember, improper use of tools results in improper maintenance. Improper maintenance results in damage to equipment and possible injury or death to you or others.

5. Safe Maintenance Practices.

Always avoid placing tools on or above machinery or an electrical apparatus. Never leave tools un attended where Computers or Electrical equipments are running.

***6.* Identify Safety Procedures to Protect Equipment from Damage and Data from Loss**

Static electricity is the buildup of an electric charge resting on a surface. This buildup and sudden release of energy, called electrostatic discharge (ESD), can be destructive to the electronics in a computer system.

ESD Protection Recommendations

ESD can cause permanent damage to electrical components. Follow these recommendations to help prevent ESD damage:

- ✓ Keep all components in antistatic bags until you are ready to install them.
- ✓ Use grounded mats on workbenches and on the work area floor.
- ✓ Use ***antistatic wrist straps*** when working on computers.
- ✓ Avoid working on carpeted areas if possible.
- ✓ Climate also affects risks when working with computer equipment. Consider the following
- ✓ recommendations:
- ✓ If the environment temperature is too high, equipment can overheat.
- ✓ If the humidity level is too low, the chance of ESD increases.
- ✓ If the humidity level is too high, equipment can suffer from moisture damage.

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following is not included in care of tools?

   A. You can hammer with a wrench.

   B. NEVER leave tools scattered about

   C. INVENTORY tools after use

   D. Clean tools after each use

2.Whenever you are required to handlerough, scaly, or splintery objectsYou use

A. Goggles B. Gloves C. Belt D Safety shoes

Note: **Satisfactory rating – above 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-6	Preparing and using tools and equipment to implement 3S

5.1. Introduction

3S Principles are your reliable instruments to make a break-through in improving your work environment and staff attending various types of jobs in your Project or Institution. This is not only a concept but also a set of actions which have to be conducted systematically with the full participation of staff serving in the Project or Institution. 3S activities are practiced in a real participatory movement to improve the quality of both the work environment and service contents delivered to your clients.

5.2. Cleaning staff and their work environment

Cleaning tools are important particularly for the group of cleaners. This category of the staffs is, sometimes, treated in wrong way by other groups due to the nature of the job, which is often misunderstood to be unimportant and disrespectful job. They should be given more attention by other staffs. Interventions, such as cleaning tool renewal, tool storage space arrangement and provision of small office and better uniform for cleaning staffs will be encouraging factors for perfection seeking in cleanliness.

5.3. Total Equipment Management

Step 1: Initial Cleaning

Thoroughly remove debris and contaminants from the equipment and remove unused equipment parts.

- Eliminate causes of deterioration such as dirt and dust
- Discover and treat hidden defects – document all identified issues with the equipment which cannot be immediately repaired.
- Paint the equipment so that future issues with the equipment can be quickly identified.

Step 2: Eliminate Contamination Sources and Inaccessible Areas

Eliminate the sources / causes of the dirt and debris and make it easier for ongoing cleaning and lubrication.

5.4. Tools and Equipment to Implement 3s

In general, the most common tools and equipment to implement 3s are:

- Paint
- Hook
- Sticker
- Signboard
- Nails
- Shelves
- Chip wood
- Sponge
- Broom
- Pencil
- Shadow board/Tools boar

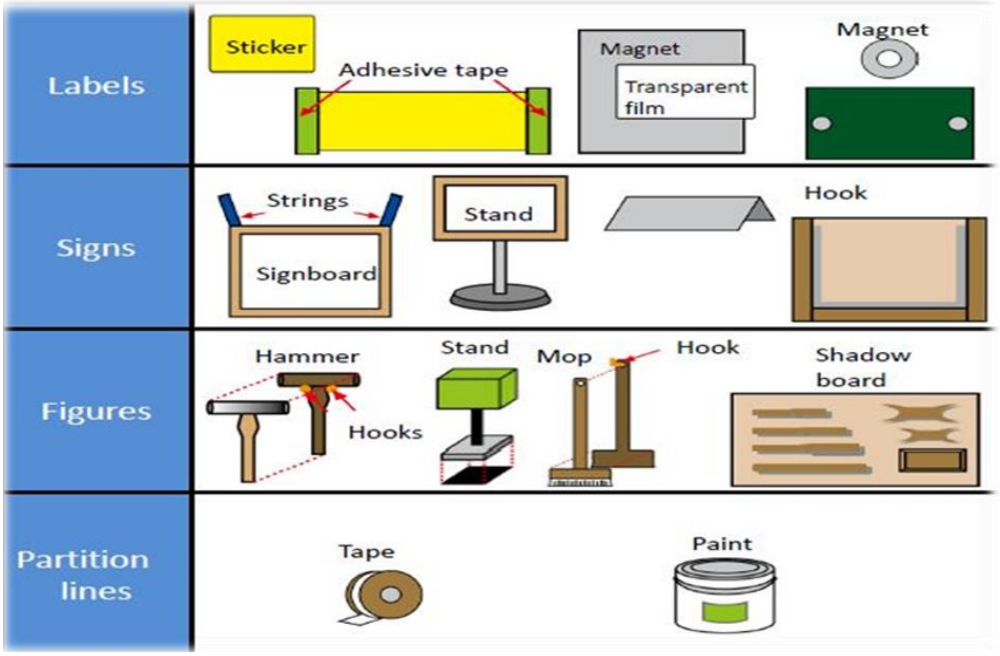


Fig. Labels, Signs and figures

The followings are also some tools and materials used to implement the third pillar of 5S-Shine.

- sponges
- brooms
- brushes
- spades
- vacuum cleaners
- waste baskets
- dust bins
- gloves
- dust masks
- detergents
- containers
- oils
- bolts
- screws
- boots shoes
- Et

Fig**.** Tools and materials

Using Kaizen board properly in accordance the procedure

- **Kaizen Board**

This board is the main source of information regarding Kaizen and the actual status of improvement and activities leading to further improvements. For every working group or team such a board has to be developed and kept up to date. A team has to focus on how they can contribute to the company's overall set of targets. As long as the team is able to transform their ideas and small problems into solution, they should do this immediately without asking for help from outside the team. ***This is real KAIZEN*****!!!** Only if a problem is too big, too much money needed or other departments or experts needed for realizing a solution, the team has to transfer the idea/problem (a reason how a solution contributes to improvement should be part) to the next higher hierarchy level.

As soon as every small unit or team is with such a Kaizen board, it's easy for the whole management to be informed at any time, just be walking around and check the information given on the Kaizen boards. Make sure that the reached improvement level will stay in future.

The information on the board is divided into four corners:

- The **"Staff performance record corner"** shows the actual staff performance as well as the gaps and need of training.

- The **"Improvement/success corner"** shows the actual status of the three to five most important improvement targets for this team. Additional you can put samples of success (picture of best performer from this team, letter of thanks from the GM...)
- The **"Idea/problem corner"** is the place where every team member is expected to place his ideas or small problems
- The **"Solution corner"** covers the solution actually developing by the team

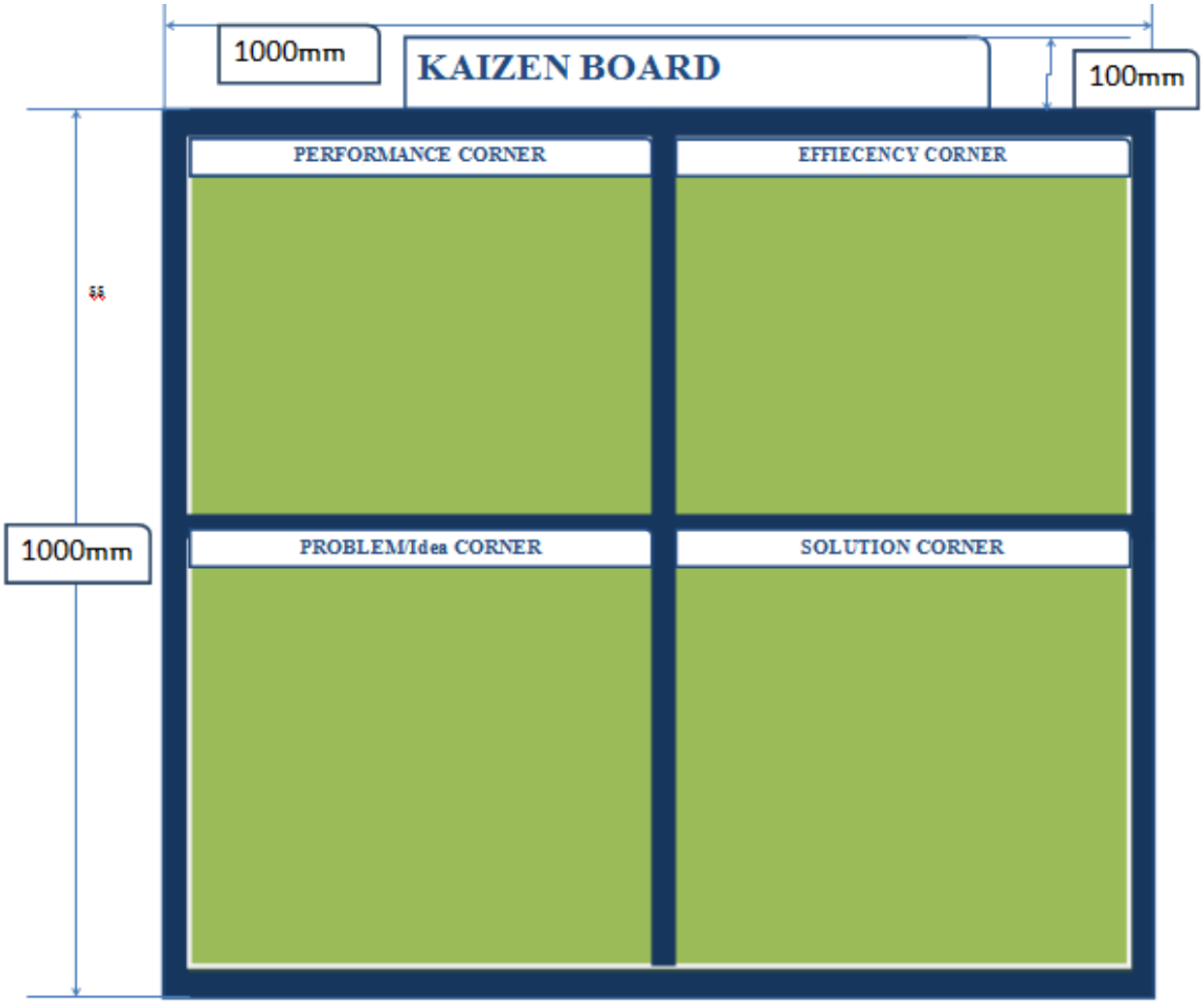


Fig. Kaizen Board

- **Roles for using the board:**

  The staff performance is visible by three different colours red = newcomer; blue = average performer with space of improvement; green = best performer able to do his process step independent without outside help)

  The improvement graphs have to be updated on a weekly basis. AS soon as the result is below the target, the team has to search for a reason why and find an idea or solution for improvement

Everybody from the team is invited to put his ideas on the board! After maximum one week time, the idea/problem should be transferred into a solution! So the Idea paper has to go to the solution corner!

After another week, small solutions have to be put into reality! Bigger solutions/problems have to be sent to the next hierarchy level for realisation.

Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1.Kaizen board is the main source of information regarding kaizen and the actual status of improvement and activities leading to further improvements.**(True/False)**

2. Statethe four corners of the kaizen board.

3. 3S Principles are your reliable instruments to make a break-through in improving your work environment.**(True/False)**

4. List out the most common tools and equipment to implement 3s.

Note: **Satisfactory rating – 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

- **Labels and Signs**

A key component of any organizational program, labelingis the easiest way to quickly and visually identify proper placement of tools, materials, and equipment.

For example, drawers of tool chests can be labeled with their contents so employees can easily find what they need. The floor can even be labeled indicating where trash cans, machinery, and other equipment should be placed so these things always find their way back to where they belong.

This type of labeling makes it easy for even people unfamiliar with your system to locate items and return them to the right places. It also helps with sustaining organizational processes because once everything is properly labeled, it's easier for employees to keep 5S in focus on a daily basis. If they ever forget the location of something, the answer is right in front of them.

In addition, larger signs, banners, and posters can be used to convey messages of organization or safety, including reminders of the 5S process. Large signs can be posted above storage areas, for example, to facilitate clean-up at the end of shifts.

Fig. Labels and Signs

Fig. Labels and Signs

- **Use Slogan and Poster of 5S Activity**
  - They encourage all the participants.

Samples of slogan*:*

"***Refresh yourself and workplaces by 5S activity.***"

"Let's maintain current 5S activity and KAIZEN for tomorrow"

"We polish "Our Minds" as well as our factories"

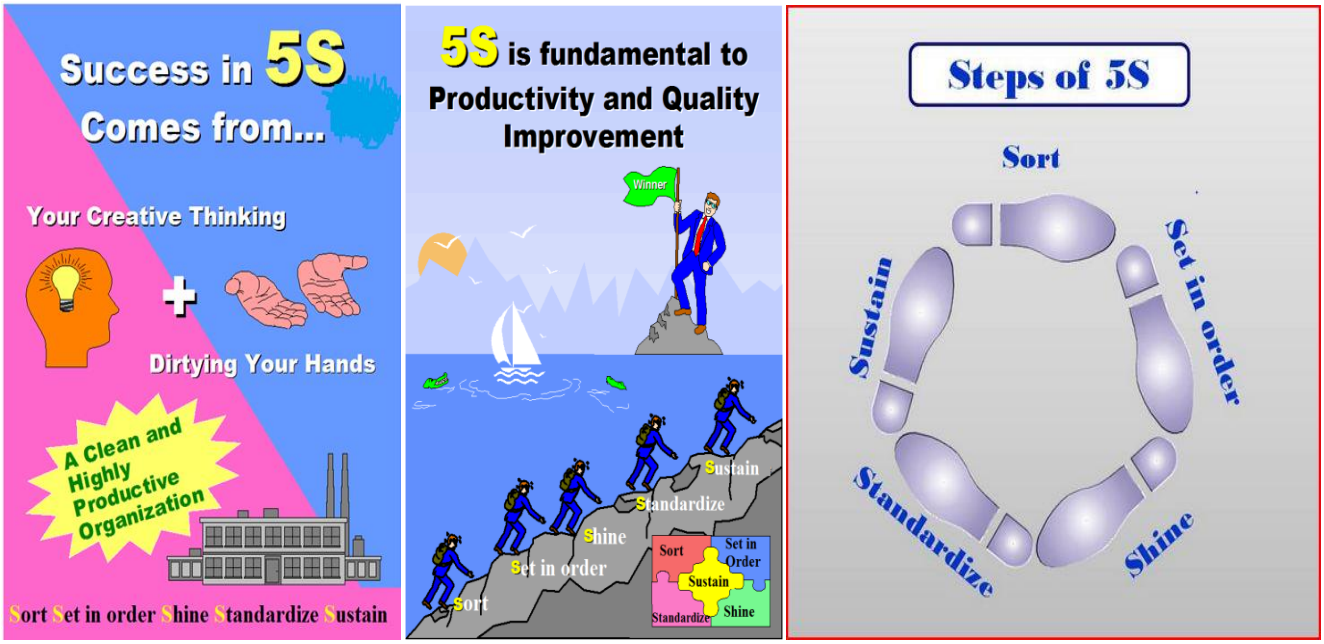


Fig. Sample of poster

Instruction Sheet	LG2: Standardize 3S

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing and following plan
- Benefits of standardizing 3S
- Preparing and implementing tools and techniques to standardize 3S.
- Relevant procedures for standardizing 3S activities.
- Following and reporting checklists
- Relevant personnel
- Keeping the workplace to the standard.
- Avoiding problems by standardizing activities.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Prepare and useplan to standardize 3S activities.
- Prepare and implementtools and techniques to standardize 3S based on relevant procedures.
- Followchecklists for standardize activities and reported to relevant personnel.
- Keepthe workplace to the specified standard.
- Avoidproblems by standardizing activities.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4, Sheet 5, Sheet 6, Sheet 7, and Sheet 8”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check4, Self-check 5, Self-check 6, Self-check 7 and Self-check 8” in page 37, 39, 49, 51, 55,57,61 and 4 respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1 Operation Sheet 2 and Operation Sheet 3” in page -65.
6. Do the “LAP test” in page – 66 (if you are ready).

Information Sheet-1	Preparing and using plan

1.1. Introduction

Standardize becomes a role model for adhering to the standards of the first three S's and encourage others to follow them. Make rules and procedures to promote a good work environment until the first three S's become everybody's second nature. By having standardized methods in place, we will be able to adapt more easily to changing conditions and be ready to take on new, complex challenges in the future, Over time, the merits of the 5-S's will become part of every aspect of our work.

This aspect of the 5S focuses on standardization, making the first three S's, Sort, Set-in order, and Shine a constant routine. The emphasis here is on visual management, an important aspect to attain and maintain standardized conditions to enable the individuals always act quickly.

1.2. Why 5s?

- The 5S concept is easy for everyone to understand because:
- It does not require the understanding of difficult terminologies.
- It is simple, driven by logic and natural to human behavior.
- It is within the reach of all type and size of industry ororganization.

1.3 What Is Not 5s?

- A housekeeping exercise
- A way to blame people for defects
- A way to force people to do their work
- A way to make people work harder and faster
- A monthly or yearly flavor e.g. Quality Month

1.4. Benefits of 5s Implementation

"We have not seen any approach to improvement that is*simpler*or more *powerful*that can be implemented at *lower cost*"

The benefits are:

- Workplace becomes cleaner and better organized.
- Shop floor 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.

1.5. Keys to 5s Success

In order for the 5S system to be successful, the most important factor is the commitment, participation and involvement of everyone and strong visible support from top management. Generally, 5S activities should be carried out systematically as follows:

- Visit 5S model companies for continual improvement.
- Train everyone adequately on 5S Practices.
- Promote 5S Campaign.
- Plan systematic approach following thePlan-Do-Check-Act (P-D-C-A) Cycle.
- Practice Performance Measurement and Reward System.

1.6. How to Initiate 5s Implementation

The 5S approach outlined in this guidebook is a simple and systematicmethodology which can be introduced and implemented in any sizeand type of organization.To start the 5S: Step-by-Step Implementation, each phase must bethoroughly analyzed and addressed using the P-D-C-A Cycle and 5W1Happroach as follows:

PLAN

- **Preparation:**
  - ✓ Provide training and education for everyone.
  - ✓ Form 5S Council.
  - ✓ Set-up 5S Zones.
  - ✓ Determine 5S objectives, goals and implementation phases.
  - ✓ Plan 5S action plan and 5S Launch.

DO

- **Sort:**
  - ✓ Identify what is necessary

Set in Order:

- ✓ Define what and how to arrange.

Shine:

- ✓ Identify dirt sources.

- ✓ Identify root causes.
- ✓ Take action to eliminate dirt sources and root causes.

Standardize:

- ✓ Who is responsible?
- ✓ What actions to take to maintain the desired condition?
- ✓ When must those actions be taken?
- ✓ Where must they apply?
- ✓ What procedures need to be followed?

Sustain:

- ✓ Everyone understands, obeys and practices the rules
- ✓ and procedures
- ✓ Continual efforts at sustaining the desired condition

CHECK

- **Assessment:**
  - ✓ Conduct Internal 5S Audit.
  - ✓ Benchmark within the department and with other organizations.
  - ✓ Ensure the established 5S procedures are followed through

ACT

- **Continual Improvement:**
  - ✓ Develop 5S practices into a HABIT.
  - ✓ Compare actual goals with set goals.
  - ✓ Reward and recognize efforts of staff.

1.7. Benefit of development of action plan

Developing a action plan with “5W1H” will be of benefit to;

- Define detailed actions to implement the countermeasures with “5W1H”
- Improve communication among section staff
- Unify the sense of purpose of the staff in implementation of KAIZEN
- Simplify a progress monitoring

Clarification of "5W1H"

"5W1H"	Clarification	Possible answers
Why?	Why we need to take this countermeasure	
Who?	Who is the responsible person of the countermeasure	
When?	Timing or period (deadline) of the countermeasure	
Where?	Place where the countermeasure taken	
What?	What is objective of the countermeasure	
How?	How do you do for the countermeasure (action, verb)	

1.8. Register 5S Certification.

- Participate in National 5S Competitions.
- Review Plan-Do-Check-Act Cycle.
- To ensure successful 5S Implementation, each phase must proceedaccordingly as illustrated in the roadmapto 5S implementation.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Which of the following is not 5S?
   A. A housekeeping exercise
   B. A way to blame people for defects
   C. A way to force people to do their work
   D. A way to make people work harder and faster
   E. All

2. In order for the 5S system to be successful, the mostimportant factor is the commitment, participation and involvement ofEVERYONE. **(True/False)**

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2	Benefits of standardizing 3S

Information Sheet-4 2	Relevant procedures for standardizing 3S activities

4.1. Standards for Sort

- Red Tag Rules
  - ✓ When to Red Tag
  - ✓ How to Red Tag
  - ✓ What's go on the Red Tag
- Rules for the Red Tag Holding Area
  - ✓ When to clear out
  - ✓ How to dispose of items

4.2. **Standards for Set-in-order**

- Which items
- Where
- How many
- Who replenishes
- Return all items…
- What to do when items are missing
- Visual standards – signs, lines, labels and color coding

4.3. Standards for Shine

- Clean and Inspect (C&I)
- Show the task, person responsible, itemsneeded, frequency, desired workplace
- Where to keep cleaning supplies, how to replenish when finished and more.

2.1. Benefits from Standardize

- The basic purposes are to;

    1. Lead to workplace standardization

        - prevent setbacks in the first three pillars
        - Make implementing them a daily habit
        - Ensure that all the three pillars are maintained in their fully implemented state.

    2. Lead to work standardization

        - Muda elimination
        - Quality improvements
        - Cost improvements
        - Delivery time improvements
        - Process improvements

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1.Which of the following is not benefits of 3S?

A. Muda elimination
B. Quality improvements
C. Cost improvements
D. Delivery time improvements
E. None

2. Ensure that all the three pillars are maintained in their fully implemented state.(True/False)

3. Which of the following is included inRed Tag Rules in preparingprocedures for standardizing 3S activities?

A. When to Red Tag
B. How to Red Tag
C. What's go on the Red Tag
D. All

4. Which of the following is not used in preparingprocedures for standardizing shine activities?

A. Clean and Inspect
B. Where to keep cleaning supplies
C. person responsible
D. All

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	Preparing and implementing tools and techniques to standardize 3S.

3.1. Implementing Standardization

Standardization Integrates the benefits found through Sort, Set in Order, and Shineinto the everyday work activity

- Make it a way of life
- It should be easily noticed when items are not in their place
- Keep it “visual”
- All 5S activities should be scheduled at the frequency rate necessaryto maintain a clean, orderly, and safe work environment

3.2. How to Implement Standardize

The three steps to making Sort, Set in Order and Shine activities (the three pillars or 3S) a habit are:

Step 1: Decide who is responsible for which activities with regard to maintaining 3S conditions.

Step 2: To prevent backsliding, integrate 3S maintenance duties in to regular work activities.

Step 3: Check on how well 3S conditions are being maintained.

As you read this section, you will discuss some of the tools for implementing Standardize of the Sort, Set in Order, and Shine activities. This is because in order to standardize we must use these same tools in a more systematic way to make sure that the first three pillars are maintained.

3.3. Common Tools and Techniques to standardize 3S are:

- 5S Job Cycle Charts
- Visual 5S
- The Five Minute 5S
- Standardization level checklist
- 5S checklist
- The five Whys and one How approach(5W1H)
- Suspension
- Incorporation
- Use Elimination

Tools for assigning 3S responsibilities include:

- 5S Maps
- 5S schedules

- 5S job cycle charts, which list the 5S jobs to be done in each area, and set frequency cycle for each job (see the figure below). In the example shown in the figure below, 5S duties are sorted out according to the first three pillars and the scheduling cycle. In the figure, code letters are used for the various cycle periods: A is for 'continuously," B for "daily (mornings)," C for "daily (evenings), " D for "weekly," E for "monthly" and F for "occasionally." Each 5S job assignee can then use these charts as 5S Checklists. This particular example shows clearly who is responsible for each job, which area, what to do, and when to do it.

5S Job Cycle Chart		Div./Dept./ Section	Production Div. 1, Assembly Dept. A										
		Entered by:	Comarella				Date:	1 Feb 1994					
								Job Cycle					
No.	5S Job		Sort	Set in Order	Shine	Standardize	Sustain	A	B	C	D	E	F
1.	Red-tag strategy (occasional, companywide)		○									○	
2.	Red-tag strategy (repeated)		○					○					
3.	Place indicators (check or make)			○						○			
4.	Item indicators (check or make)			○						○			
5.	Amount indicators (check or make)			○						○			
6.	Sweep around line				○				○				
7.	Sweep within line				○				○				
8.	Sweep around worktable				○				○				
9.	Sweep on and under worktable				○				○				
10.	Sweep work areas and walkways												

Figure: A 5S Job Cycle Chart

Visual 5S

The Visual 55 approach makes the level of five pillar conditions obvious at a glance. This is particularly helpful in factories that handle a great variety and number of materials. The main point of Visual 5S is that anyone should be able to distinguish between abnormal and normal conditions at a glance.

As a factory example, consider a drill-press process where Set in order has been applied so that the position and amount of each finished work piece is clearly indicated. As an additional visual aid, the place where the last batch item goes can be marked with a thick red line to indicate that it is time to stop and send the batch to the next process.

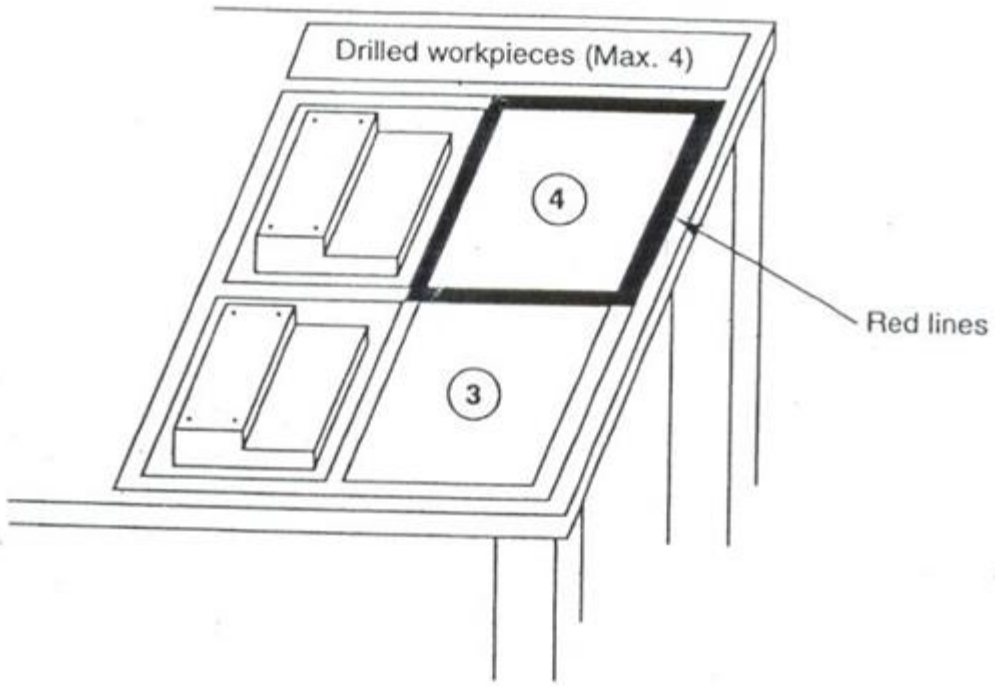


Fig. Visual 5S board

Five-Minute 5S

When using the Visual 5S approach, instant visibility can act as a trigger for taking immediate three pillar action(Sort, Set in Order, and Shine activities) against the discovered abnormalities (i.e., overproduction, disorder, and contamination). We must also deal with the question of how skillfully and efficiently these actions are carried out. Instead of following two hours for removing all of the cutting shavings from the floor, we can set up a half-hour or a one-hour Shine procedure that accomplishes the same task. The term "Five-Minute 5S" is a loose one-the actual time can be three minutes, six minutes, or whatever is appropriate. The point is to make the five pillar work brief, efficient, and habitual. In figure below shows a signboard that was made as part of a Five-Minute 5 campaign.

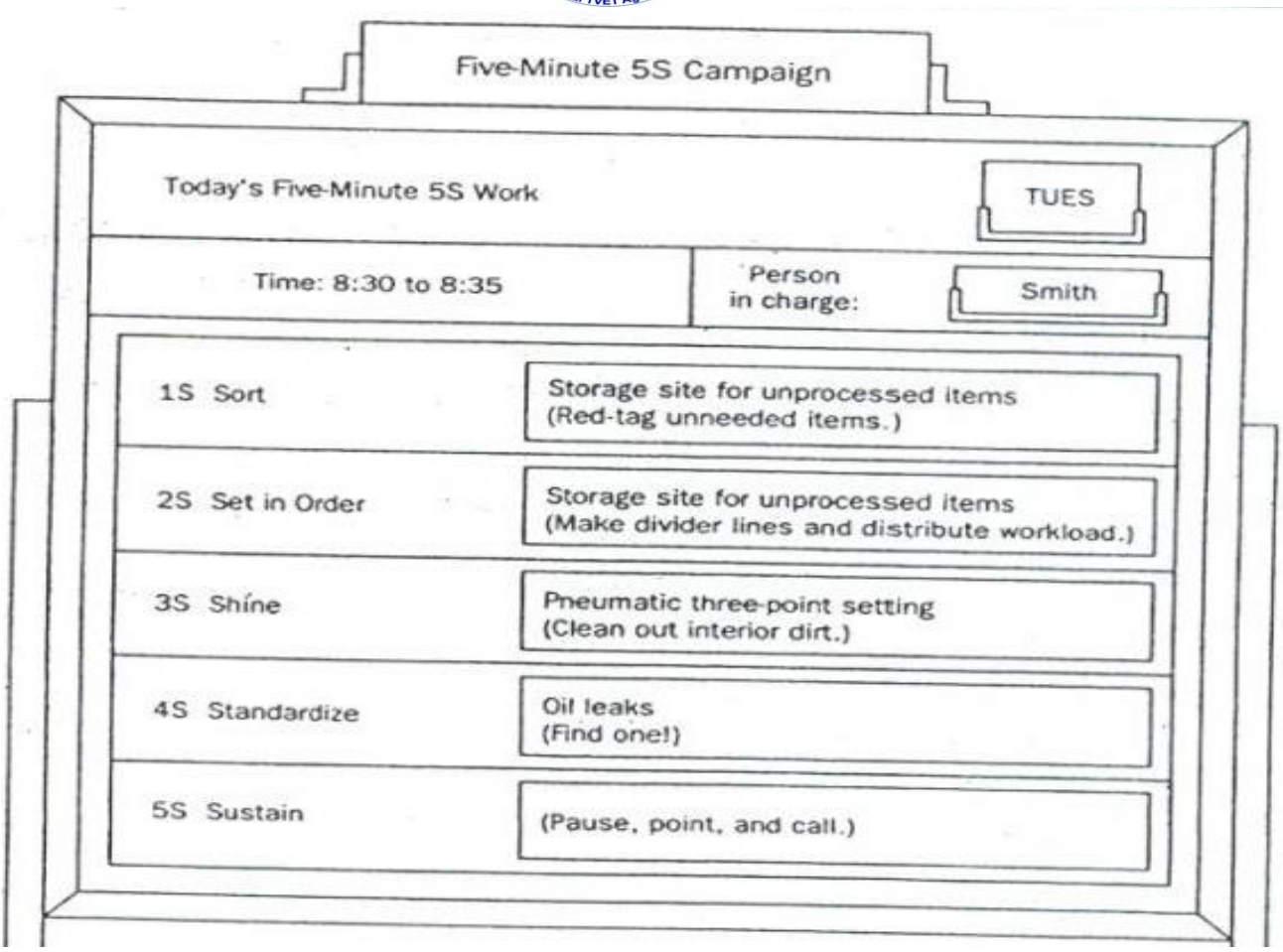


Figure: Five-Minute 5s Signboard

Checklist on 3S Maintenance Level

After we have assigned the three pillar jobs and have incorporated the three pillar maintenance into the everyday work routine, we need to evaluate how well the three pillars are being maintained. For this, we can use a Standardization-level Checklist as shown in the figure below.

Standardization-Level Checklist		Dept.: Assembly Dept. 1	Feb. 15, 1994	
		Assigned area	Entered by: McCarthy	Page

No.	Process and checkpoint	Sort	Set in Order	Shine	Total
1.	Work at Line A, Process 1	1 2 3 (4) 5	1 (2) 3 4 5	1 (2) 3 4 5	8
2.	"	1 (2) 3 4 5	1 2 (3) 4 5	1 2 (3) 4 5	8
3.	"	1 (2) 3 4 5	1 (2) 3 4 5	1 (2) 3 4 5	6
4.	"	1 (2) 3 4 5	1 2 (3) 4 5	1 (2) 3 4 5	7
5.	"	1 2 (3) 4 5	1 2 (3) 4 5	1 2 3 (4) 5	10
6.	"	1 2 3 (4) 5	1 2 3 (4) 5	1 2 3 (4) 5	12
7.	Average and total for Line A	1 (2.6) 3 4 5	1 2 (2.8) 4 5	1 2 (2.8) 4 5	(50)

Figure: Standardization Level Checklist

To evaluate the effectiveness of the maintenance activities, the evaluator ranks the Sort, Set in order, and Shine levels on a scale of 1 to 5. Such checklists can be made for specific workshop and/or production processes. One example is shown in the Figure below. 5S Checklists like the one in the figure are used to check five pillar levels in the factory as a whole. When a company implements 5S Month of intensive activities, 5S Checklists should be used to make weekly evaluation of five pillar conditions.

5S Checklist (for factories)

Factory: Tokai plant
Checked by: NK

Scoring: 3 = Very good
2 = Good
1 = OK
0 = Not good

Location	Check Item	Check Description	Year and month: 1	2	3	4	5	T
Outdoors (overall)	Are storage areas clearly determined?	Areas for paring, pallets, temporary materials storage, delivered goods reception, trash processing, and boxes	0	2	0	2	0	4
	Have paths been clearly defined?	Have white and yellow lines been laid down?	0	2	0	2	0	4
		Are traffic signs used?	0	3	0	3	0	6
		Are there any exposed wires or pipes?	1	3	1	3	1	9
	Are outdoor areas kept clean?	Are ashtrays, trash cans, gardens, entrance areas, windows, and paths kept clean?	1	3	1	3	1	9
	Are there any unneeded items?	Are signboards, copy machines, and pathways arranged properly?	1	1	1	1	1	5
Clerical (overall)	Have temp storage areas been clearly defined?	Have fire-extinguishing equipment and emergency exits been established?	2	3	2			
	Are office areas kept clean?	Are the walls dirty?						

Figure: checklists for an entire factory

The 5 Whys and 1How (5W1H) Approach

We begin by asking "why?" until we identify the underlying causes - for every answer we gel we must ask "why" again. Usually we ask "why" at least five times to get to the root of the problem. When we do find the underlying cause, we ask "how" we call fix it. Accordingly, this method is called the "5W1H' approach.

When we ask "why" setting in order is breakable, we find that one answer is because people make mistakes inputting things back. At this point, we need to identify what types of items are not being returned correctly. Once we identify this, the question is how to achieve unbreakable setting in order by making it impossible to return them to the wrong place. If we can somehow eliminate the need to return items at all, we can achieve unbreakable setting in order.

Three techniques for doing this are:

- Suspension
- Incorporation
- Use elimination.

Suspension

In the Suspension technique, tools are literally suspended from above, just within reach of the user. Figure above shows this method in practice. Here a weighted pulley device is used to suspend tools from an overhead rack. When the operator finishes using the tool, he merely releases it and it automatically returns to its proper storage place.

While this technique does not eliminate the need to return items to a specific place, it does effectively eliminate the need for people to return them. People may make mistakes in returning things, but suspension devices do not. This technique achieves unbreakable setting in Order.

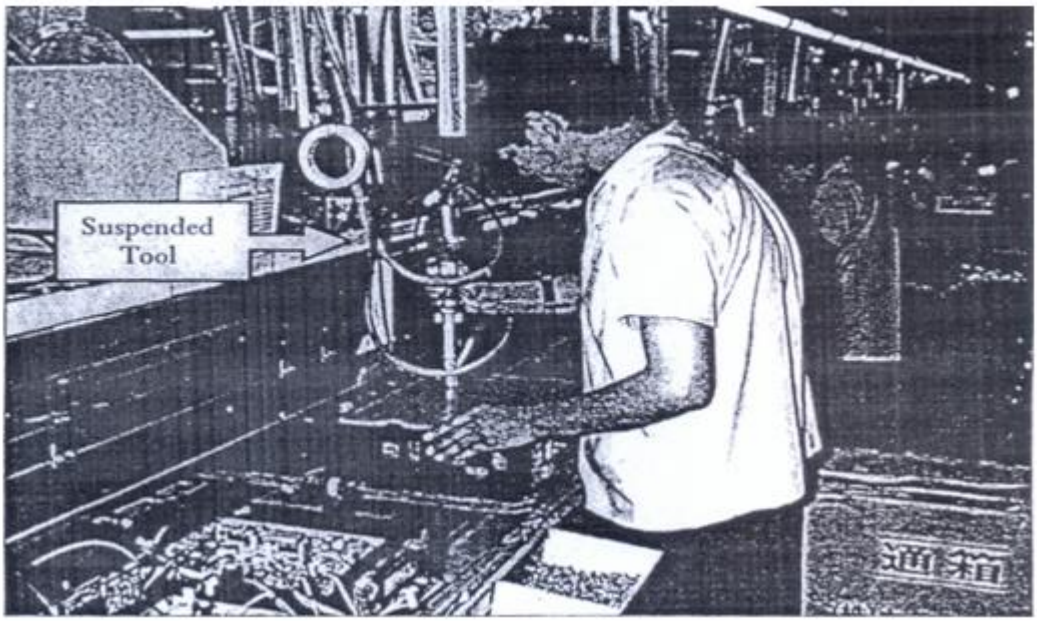


Figure: Tools Suspended from an Overhead Rack

Incorporation

Incorporation means creating a flow of goods or operations in a factory process in which (1) jigs, tools, and measuring instruments are smoothly integrated into the process and (2) such devices are stored where they are used and therefore do not have to be returned after use. The figure below shows an example where a measuring gate has been incorporated into a cutting process for an automobile part. The measuring gate catches any pieces that have not been machined to the correct height. This measuring procedure is an example of "mistake-proofing'' (or poka-yoke). The incorporation of the measuring gate into the cutting process means that its storage place is also its place of use. It is therefore used (for full-lot inspection) without having to be put back anywhere.

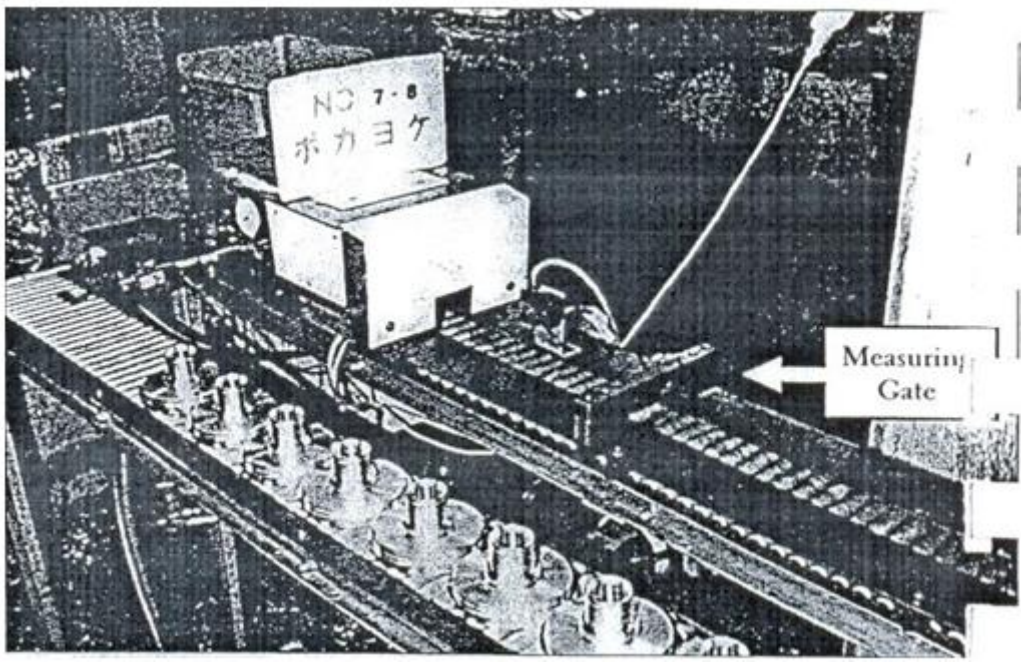


Figure: Incorporating a Measuring Gate into the Process Flow

Use Elimination

Suspending or incorporating jigs, tools, or measuring instruments effectively eliminates theneed to return them after each use. However, these items are still being used. The question is whether there is some way to serve the function of the tool without using the jig, tool or measuring instrument. A set in order approach that eliminates the use of a particular jig, tool or measuring instrument is in fact unbreakable setting in order.

There are three techniques for eliminating the use of certain tools:

- Tool unification
- Tool substitution
- Method substitution

Tool unification

Tool unification means combining the functions of two or more tools into a single tool. It is an approach that usually reaches backto the design stage. For example, we can reduce the variety of die designs to unify dies or make all fasteners that require a screw-driver conform to the same kind of screw-driver, flat-tip or Phillips.

Tool substitution

Tool substitution means using something other than a tool to serve the tool's function, thereby eliminating the tool. For example, it is sometimes possibleto replace wrench-turned bolt withhand-turned butterfly-grip bolts, thereby eliminating the needfor a wrench.

Method substitution

If we substitute ordinary wrench-turned bolts with hand-turned butterfly-grip bolts, we have eliminated the wrench, but we have not eliminated the method (bolt fastening).Bolt fastening is just one way to fasten things. Fastening pins, clamps and cylinders can also be used for this purpose. *We* mayfind we can improve efficiency even more by replacing one method with another. This is "method substitution."

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following are tools and techniques to standardize 3S?

   A. 5S Job Cycle Charts
   B. Visual 5S
   C. The Five Minute 5S
   D. Standardization level checklist
   E. 5S checklist
   F. All

2. When using the Visual 5S approach, instant visibility can act as a trigger for taking immediate three pillar action against the discovered abnormalities.**(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	Following and reporting checklists

5.1. Introduction

The continued employment of the 3S will ensure a high standard ofworkplace organization.Once the 3S are in place, the next step is to concentrate onstandardizing best practices.The plan must include the creation ofprocedures and simple daily checklists which are to be visibly displayedat every workplace.The checklists must serve as visual signpost to ensure that the daily3S requirements are carried out habitually as best practices in the workarea. Examples of checklists are:

- Job responsibilities that include:
    - ✓ Who is responsible? (ownership)
    - ✓ What actions must be taken to maintain the desired condition?
    - ✓ When must those actions be taken?
    - ✓ Where must they apply?
    - ✓ What procedures will be followed to ensure compliance?
- Work-in-progress / inventory rules.
- Cleaning procedures.
- Maintenance schedules.
- Regular work activities integrated with 3S duties.
- 5S Checklists should be used to make weekly evaluation of five pillar conditions

5S Checklist (for factories)

Factory: Tokai plant
Checked by: NK

Scoring: 3 = Very good, 2 = Good, 1 = OK, 0 = Not good

Location	Check Item	Check Description	Year and month: 1	2	3	4	5	T
Outdoors (overall)	Are storage areas clearly determined?	Areas for paring, pallets, temporary materials storage, delivered goods reception, trash processing, and boxes	0	2	0	2	0	4
	Have paths been clearly defined?	Have white and yellow lines been laid down?	0	2	0	2	0	4
		Are traffic signs used?	0	3	0	3	0	6
		Are there any exposed wires or pipes?	1	3	1	3	1	9
	Are outdoor areas kept clean?	Are ashtrays, trash cans, gardens, entrance areas, windows, and paths kept clean?	1	3	1	3	1	9
	Are there any unneeded items?	Are signboards, copy machines, and pathways arranged properly?	1	1	1	1	1	5
Clerical (overall)	Have temp storage areas been clearly defined?	Have fire-extinguishing equipment and emergency exits been established?	2	3	2			
	Are office areas kept clean?	Are the walls dirty?						

- Wecan use a Standardization-level Checklist as shown in the figure below

Standardization-Level Checklist

Dept.: Assembly Dept. 1 | Feb. 15, 1994 | Assigned area | Entered by: McCarthy | Page

No.	Process and checkpoint	Sort	Set in Order	Shine	Total
1.	Work at Line A, Process 1	4	2	2	8
2.	"	2	3	3	8
3.	"	2	2	2	6
4.	"	2	3	2	7
5.	"	3	3	4	10
6.	"	4	4	4	12
7.	Average and total for Line A	2.9	2.8	2.9	50

Fig. Standardization-level Checklist

- **5S Implementation Schedule:**

(Target Area Example)

Item	Months														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Preparation	▽		▽												
Getting Started			▽	▽											
Workplace Scan				▽	▽										
Sort					▽		▽	-	-	-	-	-	-	-	-
Set in Order							▽		▽	-	-	-	-	-	-
Shine									▽		▽	-	-	-	-
Standardize											▽		▽	-	-
Sustain													▽		▽

Notes: 1. Each **S** may take several months to implement but perfecting the process never ends

2. The 5S system will expand into other areas after the initial area is completed.

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following checklists is not used to implement 3S procedures?

A. Work-in-progress / inventory rules.
C. Maintenance schedules
B. Cleaning procedures.
D. None

2.5S system will expand into other areas after the initial area is completed**. (True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-5	Reporting Relevant personnel

5.1. Introduction

To enhance total participation at all levels of employees and develop acontinuous improvement culture and best performance spirit in theteams, theformation of 5s council is very important.5S implementation responsibilities are to be distributed throughout theorganization. Every member must know their own 5S responsibilitiesand perform accordingly.

Role and Responsibilities of Relevant Personnel:

5S Chairman:

- Communicates with everyone involved.
- Ensures total organization participation.
- Supports 5S implementation activities.
- Establishes accountability for assigned responsibilities.

5S Coordinator:

- Communicates with everyone involved.
- Facilitate work group implementation activities.
- Motivate and monitor implementation activities.
- Ensure total organization participation.
- Act as a resource for information.

5S Facilitators:

- Support 5S implementation.
- Communicate with everyone involved.
- Motivate work groups.
- Ensure employee implementation plan.
- Monitor measurement systems.

5S Leaders:

- Participate in work group implementation process.
- Communicate with everyone involved.
- Monitor progress of group activities.

Employees' responsibilities:

Participate in group activities with full commitment

Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following are the duties of 5S facilitators?

A. Support 5S implementation.

B. Communicate with everyone involved.

C. Motivate work groups.

D. Ensure employee implementation plan.

E. All

2.5S implementation responsibilities are to be distributed throughout theorganization.**(True/ False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-6	**Keeping the workplace to the standard.**

6.1. Standardized cleanup

Standardize is the fourth step of the 5S method. It means "standardized cleanup". It derives from the one-time Shine step which made the factory "shiny clean" and set the standard for cleanliness. Standardize makes it possible and feasible to live up to that standard.

Standardize enables and ensures compliance to the new standards of cleanliness. The benefits include:

- Maintaining the higher morale gained during Shine
    - ✓ Pride in the workplace
    - ✓ Relapsing into dirty or messy conditions means that the Shine effort was wasted
- Minimal investment in time: the goal is 5 minutes per worker per shift
    - ✓ No big clean-up before a visit from customers or executives
- Less downtime for equipment

6.2. How to Standardize Cleanup

The previous article introduced Standardize. This article will discuss "how to" standardize cleanup processes to maintain the Shine standard of cleanliness.

From the shine step, we have the following information about the cleanup process, or we have begun to list questions that require investigation:

- Tasks required in each work area
    - ✓ Clean surfaces
    - ✓ Disassemble, clean, and visually inspect machinery
    - ✓ How to clean and where to store the cleaning tools (and consumables, such as detergents)
- Tools required for each task
- Sequence of tasks
- Time required for each task
- How often should this task be performed?
    - ✓ Daily, weekly or less frequently?
- Where does the dirt come from?
    - ✓ Can the source be eliminated or re-directed?

Daily Cleaning Tasks

Each worker should have a set of daily cleanup tasks. These tasks may include:

- Wipe or clean tools before storing them in their appropriate racks
- Clean and inspect the machinery used during that shift
- Clean one's own workbench
    - ✓ Dust or wipe down work surfaces

- ✓ Store workbench items properly – put the lids back on jars, for example
- Sweep a designated area of the floor
- Turn off or unplug power tools as required
- Visually check that everything is in place

This set of actions should not add more than about five minutes to each worker's set of routine daily tasks. One key is that this becomes the routine.For management to enforce the standards, the standards need to be documented. Since managers actively helped in the one-step Shine process, the photographs of the tidy workplace should be sufficient.

Weekly Cleaning Tasks

It takes a bit more planning and organizing to ensure that weekly tasks are fully completed. Develop a binder for each work area, with clear instructions explaining these duties. Use a checklist to log who did each cleanup task. Follow up with a visual inspection of the task area, and by checking that the checklist has been signed.

Several successful repetitions are needed to make a change into a standardized habit. Daily and weekly tasks quickly become routine. Because of the time which elapses between the infrequent cleanup tasks, it will take longer to make them habitual and repeatable. Therefore it is vital to develop a system that works for your organization. Management should make these infrequent cleaning tasks into deliverables and inspect the results until satisfied that the change is habitual. You don't want to open a cabinet or move a machine and find a built-up mess that should have been addressed regularly.

6.3. The Benefits of "Standardized Cleanup"

- Brief (about five minutes!) daily cleanup should:
  - ✓ Maintain cleanliness, and therefore avoid periodic large-scale cleanup projects
  - ✓ Support the sort and set in order initiatives: regular cleaning ensures that only useful objects are kept, and tools are stored in their proper places
  - ✓ Maintains the morale boost from the one-time shiny-clean step: the effort was not wasted; management really is committed; and everyone continues to work toward this common goal
  - ✓ Provides a daily visual inspection of equipment and facilities, so preventative maintenance can be performed at the earliest possible time
  - ✓ Makes it easier to note that tools and materials are stored properly at the end of each shift
  - ✓ Reinforces the culture of tidiness, so workers are less likely to leave a mess that they will just have to clean up later

- The less frequent cleanups – weekly or even less often – also have benefits:
  - ✓ Reinforces the good first impression of cleanliness and tidiness, because the less-used or less-visited areas are also well-maintained; there is no contrast between a showcase work station and a messy storage closet
  - ✓ Inspections reinforce the knowledge that management is committed to keeping the factory clean, tidy and organized
  - ✓ These also provide visual inspection of machinery

- The cleaner environment:

  - ✓ Reduces environmental health hazards – dust or pools of toxic liquids – for workers
  - ✓ Reduces the chances of slips and falls, by cleaning spilled liquids
  - ✓ Reduces wear on machinery, by cleaning the equipment and by reducing airborne grit that can get into moving parts

Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. A set of daily cleanup tasks that each worker should do include:
   A. Wipe or clean tools before storing them in their appropriate racks
   B. Clean and inspect the machinery used during that shift
   C. Clean one's own workbench
   D. All

2. Which of the following is not a weekly clean up tasks

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-7	Avoiding problems by standardizing activities.

7.1. Introduction

5S is the perfect tool to identify the first improvement projects in your company toeliminate waste. Although sometimes viewed as a housekeeping technique, it is actually aninnovative management system that helps people think lean, paving the way for the adoptionof Lean principles in the organization. Understanding the 5S methodology is one of thefoundations of Six Sigma principles, and can be extremely beneficial for organizations of allkinds.

The fourth phase, standardize, focuses on maintaining the clean and safe working environment. Prior to this phase, all sorting and cleaning has been performed. This phase is there to set simple, visible guidance, how the area should be kept on daily basis. Different organizations have different ways to measure the maintenance of 5S. One of the most popular tools for standardizing is a 5S audit. These audits are kept after different time periods, for example once a month. The audit has set standards that are evaluated during the audits. Afterwards the results of the audit will be posted for everyone to see. This also helps to point out some problem areas and take actions to these.

8.2. Standardizing activities

Standardization will lead equalization of activities. Standardization is useful for;

- Easy implementation of S1 to S3 activities
- Equalization process output
- Everyone's participation

Standardization itself:

- Reduces training time: similar situations are documented in similar ways; basic tasks are performed in each work group; and experience co-workers can explain things to newcomers
- Reduces or eliminates confusion – each worker knows the tasks and responsibilities
- Improves morale by reducing the friction between workers with different personal tolerances for neatness, or different ways of storing tools
- Contributes to consistent quality and productivity

Here are some of the problems that result when we do not implement Standardization well:

- Conditions go back to their previous and undesirable levels even after a companywide 5S implementation campaign.
- At the end of the day, piles of unneeded items are left from the day's production and lie scattered around the production equipment.
- Tool storage sites become disorganized and must be put back in order at the end of the day.
- Cutting shavings constantly fall on the floor and must be swept up.
- Even after implementing Sort and Set in order, it does not take long for office workers to start accumulating more stationery supplies than they need.

These problems and others reveal backsliding in gains made from implementing Sort, Set in Order, and Shine Activities. The basic purpose of the Standardize pillar is to prevent setbacks in the first three pillars, to make implementing them a daily habit, and to make sure that all three pillars are maintained in their fully implemented state.

Self-Check -8	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Standardization is useful for:
   A. Easy implementation of S1 to S3 activities
   B. Equalization process output
   C. Everyone's participation
   D. All
2. The basic purpose of the Standardize pillar is to prevent setbacks in the first three pillars. **(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

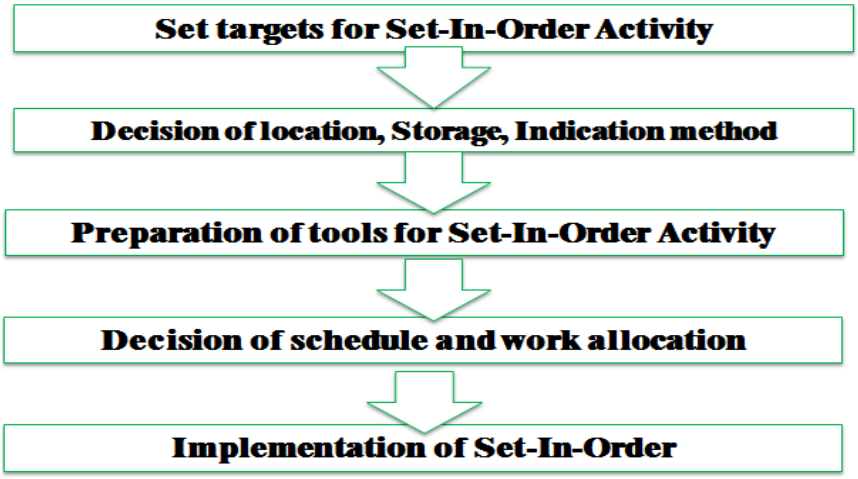
Name: _____ Date: _____

Operation Sheet- 1	Sort activity

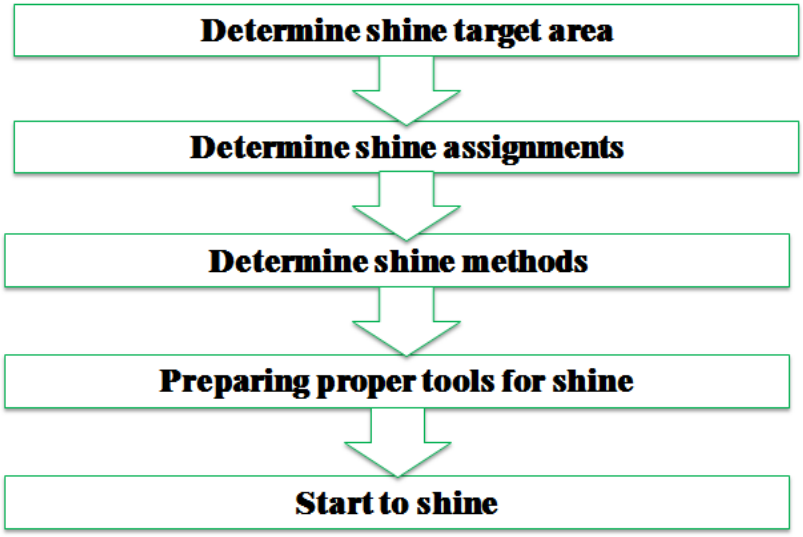
Red Tagging Procedure

1. Sort Necessary and unnecessary items
2. Decide Red tag Holding Areas
3. Attach red tag to unnecessary items
4. Taking unnecessary things to "Red tag Holding Areas "
5. Decision Making
6. Listing all unnecessary things in the Unused Article List
7. Listing all necessary things in the Shop Stock List

Operation Sheet-2	Procedure For Set-In-Order Activity



Operation Sheet-3	Procedure For Shine



LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 8 hour.

Task 1**.** Perform Red tagging procedures for unnecessary items in your mechanics workshop.

Task 2**.** Practically implement the procedures to be followed when performing set-in order in your tool room.

Task 3**.** Practically implement the procedures to be followed when performing shine in your Mechanics workshop.

Instruction Sheet	LG3: Sustain 3S

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing and following plan.
- Discussing, preparing and implementing tools and techniques to sustain 3S
- Inspecting workplace.
- Cleaning up workplace.
- Identifying situations and taking actions.
- Recommending Improvements compliance with the workplace.
- Following and reporting checklists to personnel

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Prepare and followplan to sustain 3S activities.
- Discuss,prepare and implementtools and techniquesto sustain 3S based on relevant procedures.
- Inspectworkplace regularly for compliance to specified standard and sustainability of 3S techniques.
- Cleanworkplace up after completion of job and before commencing next job or end of shift.
- Identifysituations where compliance to standards is unlikely and actions specified in procedures are taken.
- Recommendimprovements to lift the level of compliance in the workplace.
- Followchecklists to sustain activities and report to relevant personnel.

Learning Instructions:

7. Read the specific objectives of this Learning Guide.
8. Follow the instructions described below 3 to 6.
9. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4, Sheet 5, Sheet 6, Sheet 7, and Sheet 8”.
10. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check 4 , Self-check 5, Self-check 6 and Self-check 7” in page 72, 74, 77, 79,82,86and 91 respectively.
11. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1 ” in page 92.
12. Do the “LAP test” in page – 93 (if you are ready).

Information Sheet-1	Preparing and following plan

1.1. Introduction

Sustain means making a habit of properly maintaining correct procedures. Maintain and practice the first four S's. Be thorough instraightening up, putting things in order and cleaning.

1.2. Planning Stage

Steps for planning

1. 5S organization structure
2. Recognition of current condition
3. Deciding activity range
4. Goal setting
5. Planning stage
6. Budgeting
7. Kick-off :- The declaration of 5S activity

- ***5S Organizational Structure***

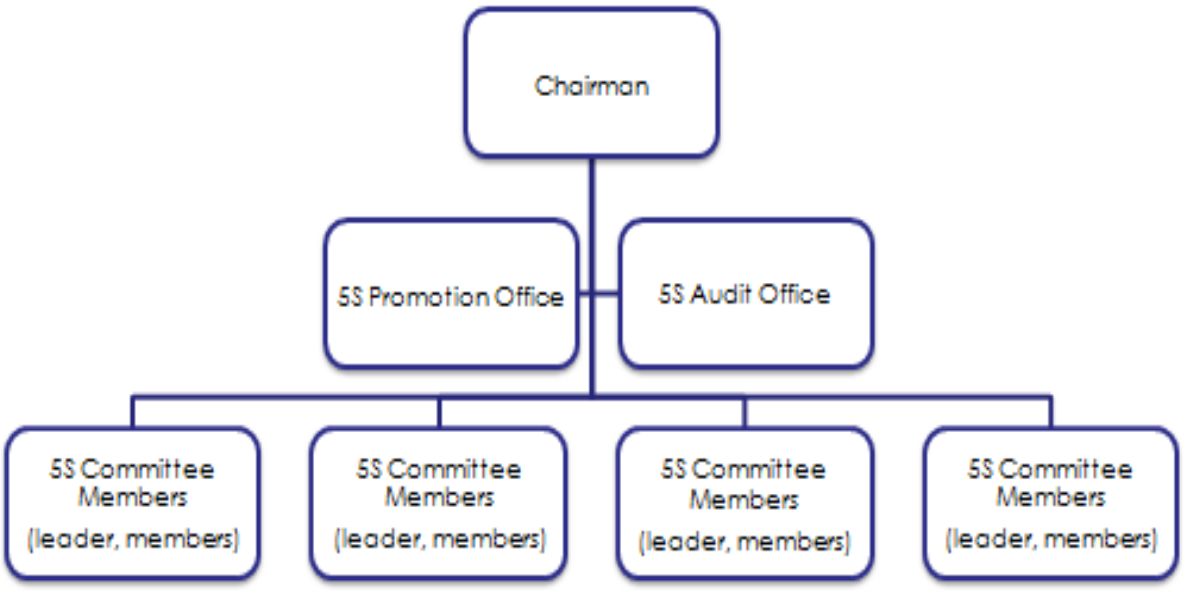
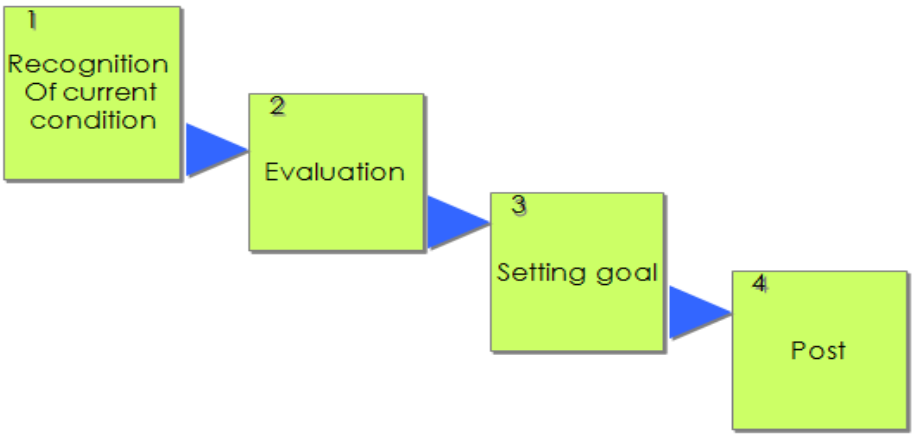


Fig. Organizational Structure

- ***5S Promotion office duties***
    - ✓ Prepare over all 5S implementation plan at company level.
    - ✓ Follow up standardize 5S activities at the company.
    - ✓ Perform any other 5S related activities.
    - ✓ Organize Training
- ***Recognition of current condition***
    - ✓ by using 5S Checklist and
    - ✓ Photography (Next page)
- ***Decide Activity range***

- **Planning stage:** includes promotion, time frame and overall 5S activities plan.
- **Goal setting**



- **Budgeting**

It is necessary to prepare a budget for 5S activity because it costs money.

- **Kick-off**: - is the declaration of 5S activity.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Making a habit of properly maintaining correct procedures is the description for

A. StandardizeB. Sustain

C. SortD. Set-in order

2. 5S preparation and planning does not need any source of budget.

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2	Discussing, preparing and implementing tools and techniques to sustain 3S

2.1. Some techniques to sustain

- ✓ 5S Slogan
- ✓ 5S poster
- ✓ 5S newsletter and kaizen board
- ✓ 5S audit
- ✓ awarding systems
- ✓ Big cleaning day
- ✓ 5S month
- ✓ Benchmarking tour

2.2. Steps in preparing and implementing

Step 1 - Maintain 5-S awareness

- We need to be continually motivated to improve the company and promote the 5-S program.
- Distribute a 5-S newsletter, 5-S posters, 5-S awards, 5-S motto, 5-S Day — always continuing to inspire fresh, new enthusiasm
- Develop a trigger for implementing Improvement activities

Step 2 - Create opportunities to improve the 5-S

- Group tools to use are:
  - ✓ 5-S observation tours
  - ✓ Continuing Kaizen workshops
  - ✓ Team and Management Audits using Workplace Organization Tool
  - ✓ Team and Management Audits using Cleaning and Lubrication Standards and Visual Work Instructions

Step 3 - Create motivation for 5-S

- Motivation at the workshop level
- To what level has our company progressed in the 5-S program? What is our goal?
- Promote the idea of how much more the 5-S level of the company as a whole needs to improve to pass our competitors
- Take video/pictures of our area every 6 months and compare to see improvements.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following is not a tool to sustain 3S?

A. 5S Slogan

B. 5S poster

C. awarding systems

D. Big cleaning day

E. None

2. Distribute a 5-S newsletter, 5-S posters, 5-S awards, 5-S motto, 5-S Day — always continuing to inspire fresh, new enthusiasm to Maintain 5-S awareness.(True/False)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	Inspecting workplace.

3.1. Inspection and Maintenance

Cleaning is not the only facet of Shine. The daily Shine ritual should also include inspection and routine maintenance. As your employees are doing their daily cleaning routine, they should be inspecting tools and machinery for damage as well. Include this in the daily checklist to make sure it gets done.

Periodic routine maintenance should also be done at this time. Some examples are checking the oil level in machinery, tightening up belts, hoses, nuts, and bolts, or checking if tools need sharpening.

The goal for Shine is to keep everything in great working order so it lasts as long as possible and doesn't break down.Clean and properly maintained tools and machines also increase safety in the workplace. Fewer injuries and less downtime equate to higher morale and higher productivity.

What if an employee sees a pool of oil that wasn't there before or notices a safety hazard? If it's a quick fix, put a maintenance tag on it and notify your supervisor. If something needs further evaluation, there should be a maintenance log you can fill out that will ensure further action. And don't forget your computers and other office equipment! They need to be defragmented (PCs) and air-dusted periodically to keep them in good condition.

Cleaning check list should be systematically used in every work venue. This is not a bid burden torespective work team member to give mark just after conducting routine cleaning work before andafter the work. Once the check list is applied, relevant supervision should be conducted.For sustaining the check list utilization, the format should not be too complicated. Also, the guidanceshould be done by the middle class managers under no blame policy but under encouraging atmosphere.

3.2. Sustaining the gains

a. Top management Patrol Must

- Check Up the activities Comprehensively
- Give emphasis on sustaining of the activity
- consider committees feedback

b. 5S Committee members and Promotion office Patrol Must

- Evaluate "5S Check List"

- Record problems on”5S check findings”
- Tack picture of 5S problems

c. Mutual patrol

- Check mutually among 5S groups

d. Self patrol

- 5S leader and members check the results of activity by themselves.

e. Checklist patrol

- Point out the problems by themselves at site as well as evaluate the results and encouragemembersto urgeKAIZEN.

f. Camera patrol

- Visibly highlight the problems and progress of the activity using photographs.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following is true about top management Patrol?
   A. Check Up the activities Comprehensively
   B. Give emphasis on sustaining of the activity
   C. consider committees feedback
   D. All

2. The daily Shine ritual should also include inspection and routine maintenance**.** **(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	Cleaning up workplace.

4.1. Introduction

Developed in Japan, 5S is a system of organizing workplace for efficiency, effectiveness and safety. 5s is important because the implementation is about empowering employees to control their work area and create an environment where they want to work every day. It is a program that only works with grass roots level engagement. With commitment to safety, we are equally committed to 5S to ensure a safe place to work. It enabled us to indicate where waste was occurring and thus improve the work area sustainably. We recognized real problems, found solutions and ultimately we were successful in our endeavors.

4.2. Determining shine methods

- Choosing targets and tools:- define what will be cleaned in each area and what supplies and equipment will be used
- Perform the five minute shine:- cleaning should be practiced daily and should not require a lot time
- Creating standards for shine procedure:- people's needs to know what kinds of procedure to follow in order to use their time efficiently; Otherwise, they are likely to spend most of their time getting ready to clean

4.3.Sustaining cleaning activity (Sample applied on a given area)

Type of cleaning	Time	Frequency (timing)
Daily cleaning	5 – 10 min.	Minor operation before/after working hour at each shop
Weekly cleaning	15 – 30 min.	Weekend
Monthly cleaning	30 – 60 min.	End of month
Big cleaning days	2 – 4 hrs.	Before national holidays
Location which is not easy to clean	1 – 2 days	In case of necessity for assistance request to other division

Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following will define what will be cleaned in each area and what supplies and equipment will be used?

   A. Standards for shine procedure
   B. The five minute shine
   C. Choosing targets and tools
   D. None

2. 5s is important because the implementation is about empowering employees. **(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-5	Identifying situations and taking actions.

5.1. Problems Avoided by Implementing Sustain

Here are some of the things that happen in a company when Commitment to the five pillars is not sustained.

1. Unneeded items begin piling up as soon as sorting is completed
2. No matter how well Set in Order is planned and implemented, tools and jigs do not get returned to their designated place after use.
3. No matter how dirty equipment becomes, little or nothing is done to clean it.
4. Terms are left protruding into walkways, causing people to trip and get injured.
5. Dirty machines start to malfunction and produce defective goods.
6. Dark, dirty, disorganized workplaces lower workers' morale.

These 5S related problems and others are likely to occur in any factory or office that lacks a commitment to sustain the five pillar gains over time.

5.2. Creating Conditions to Sustain Your Plans

The implementation of the sustain pillar is different from that of the sort, set in order, shine, or standardize pillars in that the results are not visible and cannot be measured. Commitment to it exists in people's hearts and minds and only that have shows its presence. Because of this it cannot exactly be “implemented” like a technique, However, we can create conditions that encourage the implementation of the sustain pillar.

For instance, going back to our exercise program example, how could you create conditions in your own life that would encourage sustaining your plan to work out at a gym three time a week? You might:

- Join a gym with a friend so you can work out together and encourage each other (see Figure above).
- Create a workout schedule with your friend.
- Make a plan with your spouse to eat dinner later three nights a we so you can go to the gym after work.
- Get extra sleep on the nights before you work out, so that you will not be too tired by the end of the day to follow through with your exercise plan.

These conditions would make it easier for you to sustain your schedule for exercising at the gym three times a week.

Similarly, you and your company can create conditions or structure that will help sustain to the five pillars. The types of conditions that are most useful for this are:

- **Awareness.** You and your coworkers need to understand what the five pillars are and how important it is to sustain them.
- **Time.** You need to have or make enough time in your work schedule to perform 5S implementation.
- **Structure.** You need to have a structure for how and when 5S activities will be implemented.
- **Support.** You need to ha e support for your efforts from management in terms of acknowledgement, leadership, and resource
- **Rewards and Recognition.** Your efforts need to be rewarded.
- **Satisfaction and Excitement.** The implementation of the five pillars needs to be fun and satisfying for you and the company. This excitement and satisfaction gets communicated from person to person, allowing 5S implementation to build as it involves more people.

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1.When Commitment to the five pillars is not sustained:

A. Unneeded items begin piling up as
B. Tools and jigs do not get returned to their designated place after use.
C. No matter how dirty equipment becomes, little or nothing is done to clean it.
D. Terms are left protruding into walkways, causing people to trip and get injured.
E. All

2. You and your coworkers need to understand what the five pillars are and how important it is to sustain them.**(True/False)**

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-6	Recommending Improvements compliance with the workplace.

6.1. 5S Workplace Organization

5S is one of the most widely adopted techniques from the lean manufacturing toolbox. Along with Standard Workand Total Productive Maintenance, 5S is considered a “foundational” lean concept, as it establishes the operationalstability required for making and sustaining continuous improvements.

The primary objective of 5S is to create a clean, orderly environment- an environment where there is a place foreverything and everything is in its place. Beyond this, many companies begin their lean transformation with 5Sbecause it exposes some of the most visible examples of waste it also helps establish the framework and disciplinerequired to successfully pursue other continuous improvement initiatives.

6.2. 5S Implementation in the Office

As a company holistic approach, 5s implementation in the office activities must fully support shop-floor manufacturing operations to eliminate waste as a means to improve productivity. When developing a culture of continuous improvement, 5S improvement steps mirrors our attitudes and behavioral patterns during the transformation process. Although not manufacturing, you can consider the office as a paperwork factory. Like manufacturing, adopting the 5S principles throughout the office and administrative functions increases efficiency.

The 5S management philosophy eliminates waste and improves office organization and standardization. 5S serves as the foundation for continuous improvement activities and provides the base for applying other Lean methodologies. It also supports the cornerstones of employee engagement. Although 5S concepts are simple and easy to understand, many organizations fail in the implementation process. Companies mistake 5S as a spring cleaning program. However, 5S, when applied correctly, continuously improves workplace organization and improves productivity.

6.3. The Three Different Types of Workplace

A. 3rd class workplace:

- Have people who make a mess and no one cleans up.

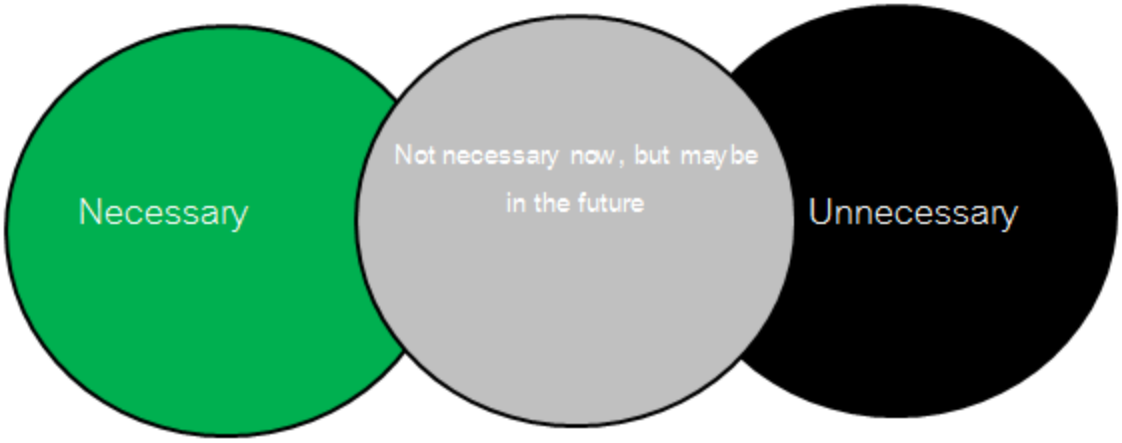
A. 2nd class workplace:

- Have people who make a mess and another group of people cleans up.

A. 1st class workplace:

- Have people who don't make a mess and yet everyone cleans up.

How mess occurs at workplace?



6.4. 5S Workplaces

Key components of the 5S philosophy are safety and good housekeeping practices. Safety is an integral part of the sort, set in order and shine segment of any 5S project. Standardize and sustain refers to methods used to ensure that safety and good housekeeping is maintained. Check sheets can be used to build good habits in these areas and to ensure good housekeeping is maintained in all areas. Implementing the 5S method means cleaning up and organizing the workplace in its existing configuration. It typically is the first lean method that organizations implement. This lean method encourages workers to improve their working conditions (including safety and ergonomics) and helps them to learn to reduce waste, eliminate unplanned downtime and conduct in-process inventory.

The 5S methodology typically is implemented using a three-step process, which includes establishing a cross-functional team (including employees who work in the associated areas), touring all areas associated with the manufacturing processes under review and

brainstorming ways to improve organization to reduce waste. For example, factories usually have a great deal of waste associated with searching for items. It is not unusual for a 3-hour changeover routine to include 30 minutes of searching. When attempting to reduce changeover time radically (for example, going from 3 hours to 10 minutes), there clearly is no room for 30 minutes of searching waste.

For example, team members might observe workers walking long distances to obtain needed parts, or spending time reaching into bins on shelves to find parts. Or they may identify hardware, like nuts, bolts and screws that are used in a certain area, but stored in a central storage facility far away from the point of use.

Audits can be conducted to review 5S progress in particular processes from level 1 (initial effort) to level 5 (habit). In the “Shine” category, for example, the goal is to have a system in which work area housekeeping is a routine way of life and corrective action measures are in place to address cleanliness issues.

Safety also plays an important role in the 5S audit process. Standard worksheets are developed for each process to help make a factory more visual, highlighting safety precautions for each cell, in addition to showing where all work in process should be located.

A clean, well-organized and safe work environment is, of course, an efficient and productive work environment. A less obvious, but still important, aspect of lean is that it gets the employees involved throughout the process, engaging and challenging best practices, encouraging the employees to have a real sense of involvement and to work hard to maintain all the effort the team has invested.

Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. Which of the following is true about 3rd class workplace?

   A. Have people who make a mess and no one cleans up

   B. Have people who make a mess and another group of people cleans up

   C. Have people who don't make a mess and yet everyone cleans up

   D. None

2. The primary objective of 5S is to create a clean, orderly environment- an environment where there is a place for everything and everything is in its place.**(True/False)**

Note: **Satisfactory rating –5points** **Unsatisfactory - below 5points**

Answer Sheet

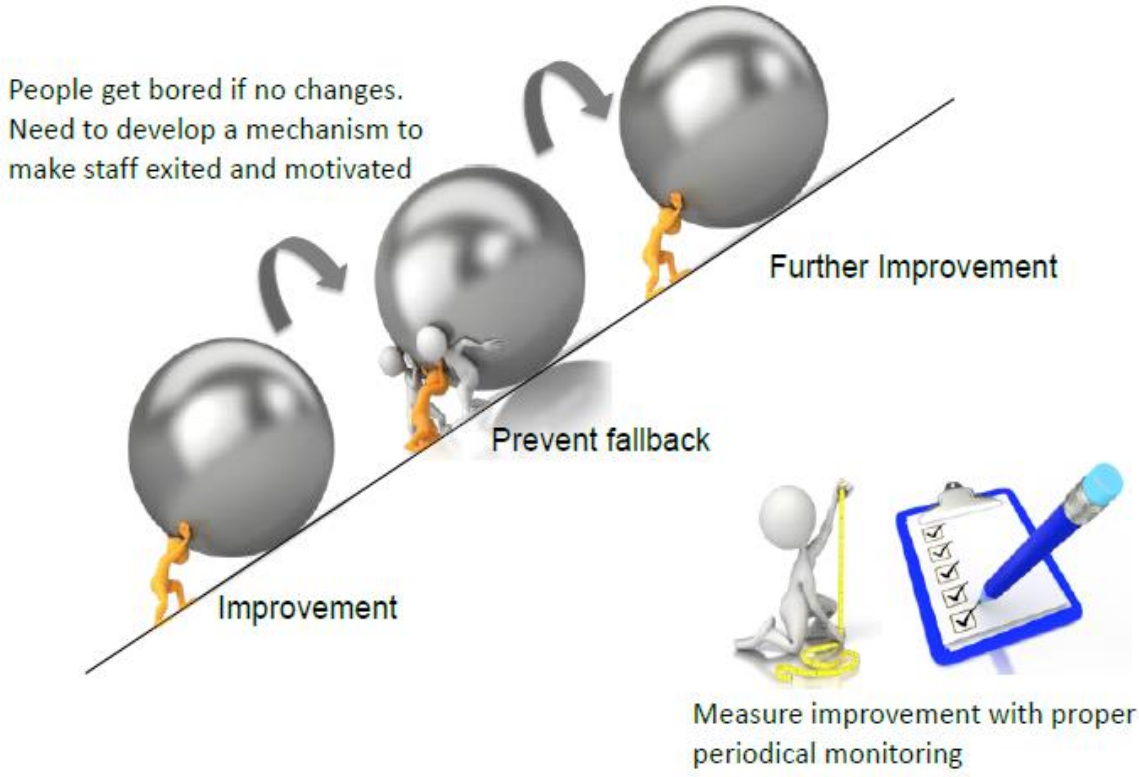
Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-7	Following and reporting checklists to personnel

7.1. Sustainability activities



Example of "Sustain" activities

- Regular progress reporting
- Refresher training
- Periodical evaluation of 5S activities with proper advices for continuation and further improvements
- Appreciation, recognition and awarding on good 5S activities
- Reminder using 5S corner, new letters, good practice sheet etc.

7.2. 5s Checklist for Manufacturing

In a manufacturing environment, generating the 5S in practice can bring in results that could considerably raise the environmental performance in line with the improved housekeeping and health & safety. Generating the 5S checklist for manufacturing prior to auditing comes in different forms. There are a total of 25 evaluation criteria covering the 5S principles. Such criteria requires to perform work up-to-date and length of time the inventory, materials in queue in the area covering the principles of sorting, straighten, shine, standardize and sustain are classified under the items found in the manufacturing environment like furniture

(bench/table, desk, chairs, cabinets, etc.), machinery, equipment, tools, storage areas, uncluttered with no unnecessary items, documents and boards. Because the 5S Methodology relies on organized, standard practices and processes to improve and sustain quality in production, the 5S checklist for manufacturing divides each of the housekeeping stages that are graded from zero to four, with zero being unacceptable and four meaning outstanding or perfect.

Example of 5s Checklist for Manufacturing

Below is an example on how to generate a 5S checklist for manufacturing. First column lists action items. Column headings include the five housekeeping items of 5S, sort, straighten, shine, standardize, and sustain. For each action item, the auditor who analyses the process can grade each item to determine a score. In this 5S checklist for manufacturing, a perfect score would be 100 (25 questions x 4 points) if all action items were given the highest mark of a four.

Each criterion is evaluated against a five-point scale:

- 4 points = No deviations
- 3 points = 1-2 deviations
- 2 points = 3-4 deviations
- 1 point = 5-6 deviations
- 0 point = >6 deviations

The possible score is organized into five scoring bands:

- 81-100: Excellent
- 61-80: Good
- 41-60: Fair
- 21-40: Poor
- 1-20: Very Poor

This 5S audit worksheet can be applied generally to all manufacturing departments. You may change the audit criteria to suit your specific environment. With the 5S checklist for manufacturing, you can instantly view your monthly 5S audit results visually with a Radar Chart and a Monthly Trend Chart. A substandard 5S process would show a much lower score. However, because the 5S audit check quickly identifies the areas that need improvement, the 5S auditor can pass on the information to the 5S leader, usually top management.

Upon receipt of the 5S audit check sheet, the leaders of the process are then able to determine if additional steps, tools or methods are needed to sustain the production process.

Conclusion

Generating 5S practice in theory involves straightforward steps which lead to continuous improvements. 5S is a Lean technique that involves activities designed to create and

maintain a disciplined workplace. It helps create a better working environment and can be implemented to eliminate waste and improve operational processes. The performance of 5S in a workplace could be evaluated using a 5S Checklist, which is a tool that will help ensuring that 5S standards and workplace organization are being met. It enables the observer to better address compliance gaps and provides an opportunity for continuous improvement.

7.3. Sustain 3s Audit

Department _____

Audited by _____

Date __/__/__

3S Audit -The Visual Office

Focus	Means	Occurrences	Points Deducted Per Occurrence	Total Deducted	Target	Actual	Actions Arising
Red Tag	Any item not required with 1 month or not clearly identified and located		1		20		
Orderliness	Passage ways clear All areas clean and tidy and free from clutter		1		15		
Personal desk Space	No more than 2 days organised relevant work		2		20		
Notices/Signage	Relevant,up to date , organised and in good condition		1		15		
Shared Areas	Under control and orderly with relevant materials / equipment e.g. photo copiers , library		2		20		
Health and safety	No Hazards		2		10		
					Total		

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Self-Check -7	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:(5 pts each)

1. which of the following is notexample of sustain activities?

A. Regular progress reporting
B. Refresher training
C. Appreciation
D. recognition
E. awarding on good 5S activities
F. All

2.Generating the 5S checklist for manufacturing prior to auditing comes in different forms.**(True/False)**

Note: **Satisfactory rating –5points** **Unsatisfactory - below 5points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-8	Avoiding Problems By sustaining Activities

8.1. Sustaining Activity

Support activity that may not directly contribute to customer value, product quality or revenue generation, but is necessary for an organization continuity.

Operation Sheet-1	*Steps for planning sustain stage*

Steps for planning

1. Kaizen Team organizational structure.
2. Recognition of current condition
3. Deciding activity range
4. Goal setting
5. Planning stage
6. Budgeting
7. Kick-off

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 8 hour.

Task 1- Briefly describe steps in planning the sustain stage and apply the steps in sustaining the 3pillars (3S) in your actual work shop

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