Quality Circle Forum of India
Hyderabad Chapter


Quality Circle
Concept,
Philosophy & Tools /
Techniques

History of Quality Circle?

- Industrial product quality was in shambles after World War II.
- ***JUSE*** invited Dr.W.E.Deming and got its engineers trained in SQC. Dr. J.M.Juran lectured them on Management Quality and inspired by them, Dr.K.Ishikawa had amalgamated theories of motivation and quality and taken Quality to Gemba i.e. shop floor.

  Dr. K.Ishikawa started Quality Control Circles (QCC) in Japan in 1962. He is known as Father of Quality Circles.

What is a Quality Circle?

- A small team,
- To tackle work related problems,
- Voluntarily,
- Within the same work area,
- To develop people-human resources

This small team carries on:

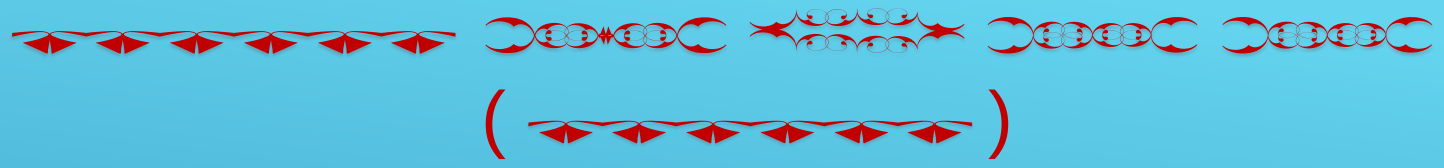
- Improvements continuously,
- As an integral part of Total Quality Management,
- Self development and mutual development, leading to Organizational development.
- Learning and working with the quality tools & techniques,
- And with all members participating.

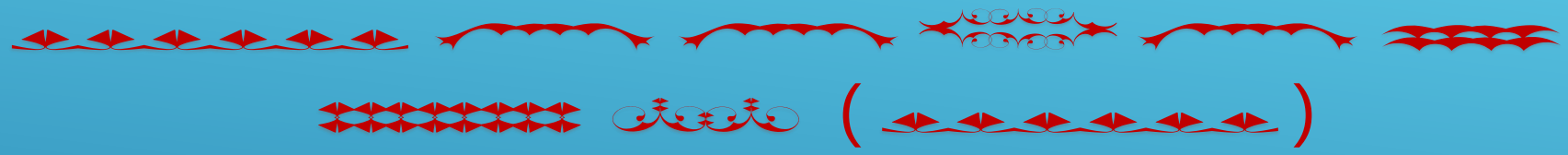
QC creates Pleasant Work Environment

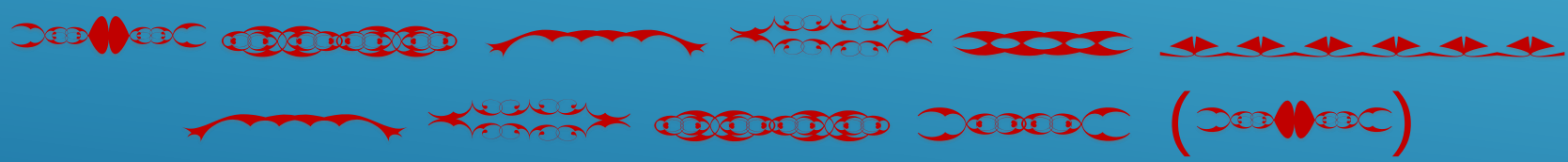
- Happiness in being self confident.
- Discovering one's own abilities.
- Happiness in continuous learning, and self development.
- Happiness in being recognized.
- Happiness in realizing one's self worth.

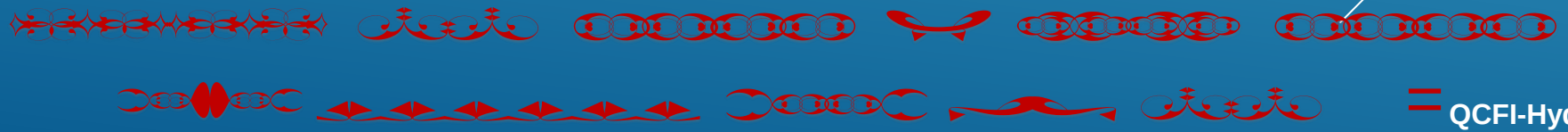
Benefits :

- Improves their analytical capabilities.
- Improves their communication skills.
- Interpersonal relationships improve.
- Makes them to share knowledge.
- Lays foundation for their overall personality development.
- Leadership abilities improve.
- Improves decision making capabilities.









How Quality Circle concept can be applicable

- can be used by all
- can be practiced by everybody
- can be used by maintenance & House keeping staff
- can be used by Horticulture staff & employees

Let us remember that there are no dearth of problems in any work place and scope for betterment always exists.

Probable areas where QCs can be implemented :

1. To improve the performance among employees where it is presently below the expectation.

2. To bring betterment in working methodology.

3. Improving present working techniques.

4. In maintenance areas of the work area (civil, mechanical & electrical).

5. In horticulture areas.

Functioning of Quality Circles :

- ***How the Quality Circles function?***

  They meet once in a week periodically and regularly for one hour.

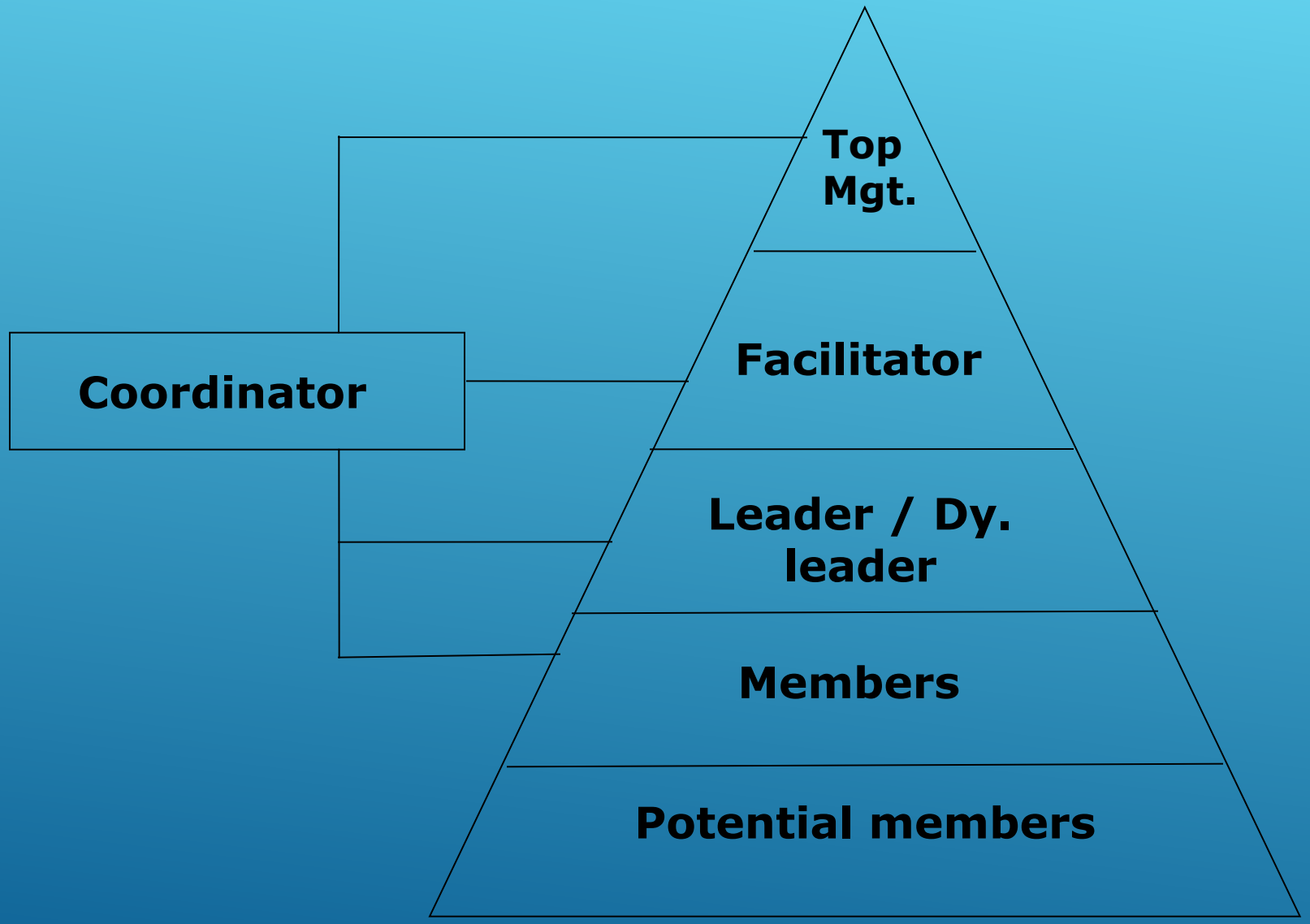
- ***How many members should there be in a circle?***

  4 to 5 members

What are the principle components of QC?

- Regular QC Meetings.
- Training In Problem Solving Tools And Techniques.
- Management Presentation.
- Review And Monitoring By Steering Committee.

SUPPORT STRUCTURE FOR QUALITY CIRCLE?



Role of Top Management.

- Top management is a monitoring group headed by the Head of the organization.
- To review and improve the functioning of Quality Circles, through periodic and regular meetings.
- Inspire strong team spirit.

Role of Steering Committee

- Steering committee comprises of all functional heads as Quality Circles can function in any area.

- Steering committee decides about the financial resources needed for effective functioning of Quality circles.

- Steering committee meets frequently to monitor the functioning of Quality circles and gives required guidance / directions to the movement including QC pep up activities.

Role of Coordinator

- Acts as a link between top management, steering committee, facilitators and Quality Circles.
- Appraises the steering committee on the functioning of Quality Circles in the organizations.
- Organizes training programs for Facilitators, QC Leaders and Members.
- Monitors meetings of Quality Circles regularly and suggests corrective actions needed.

Role of Facilitator

- A Facilitator acts as a catalyst and stimulates the Quality Circle as :

  a) a mentor,

  b) guide

  c) supervisor

- A Facilitator ensures that :

- Circle meetings are conducted regularly.
- Members attend meetings regularly.
- Meetings are conducted effectively.
- Clarifies and helps in defining the selected problem, goal setting and planning.
- Proper choice and application of problem solving techniques.
- Prepares the Circle for management presentation.

Role of Quality Circle Leader

- A leader is a person chosen by the Circle members on consensus from grass root level.
- Success of a Quality Circle depends on how well a leader leads the group.
- Rotation of leader will give opportunity to each member to develop leadership skills.
- Rotation should be time bound or when the circle takes up another problem for solving.

- Should conduct circle meetings regularly.
- Should have a knowledge of group dynamics.
- Should be a task oriented person.
- Prepares for management presentations and involves everyone in the team.
- Has adequate knowledge to clarify doubts of members.
- Does not take credit for self but gives credit to members of the Circle.

How to conduct effective meetings :

Effective meetings are conducted by following 4 steps:

- Plan the meeting by circulating the agenda in advance.
- During the meeting adhere to the agenda.
- Review briefly the discussions of the previous meeting.
- Record the minutes of the meeting and prepare agenda for next meeting.

Gains from Quality Circles

- Group activity provides stimulus for learning through pooling of knowledge.

- Self development and mutual development takes place through exchange of ideas and knowledge.

- In solving problems on the job training is taking place.

Members learn to :

- listen to others view points.
- understand the other person.
- accommodates others' view points / opinions.
- cooperates with one another.
- to respect each other.
- to be equal partners.
- protect the independence and initiative of each member.
- share information without any reservations.

A major key to the success of Quality Circle movement in any organization is the whole hearted support of the Top Management. Without the support of the Top Management this movement will not see the light of the day.

Quality Circle is best defined as :

A small group of voluntary participants, from the same work area, who meet regularly for an hour on a given day of a week at a given time, to discuss, analyze and debate over identified work related issue / problems.

The Tools & Techniques generally used to solve any problem

1. **FLOW DIAGRAM :** To enable understanding of the process/flow and locate a problem.

2. **BRAINSTORMING :** For generation of ideas in problem listing, listing of causes in problem analysis, & finding solutions.

3. **DATA COLLECTION:** To understand the magnitude of the problem.

4. **GRAPHS :** Presentation of large amount of DATA in a cohesive manner in the pictorial form.

5. **STRATIFICATION :** Segregation of data into different categories.

6. **CAUSE & EFFECT DIAGRAM** **:** Logical linking of causes to the problem.

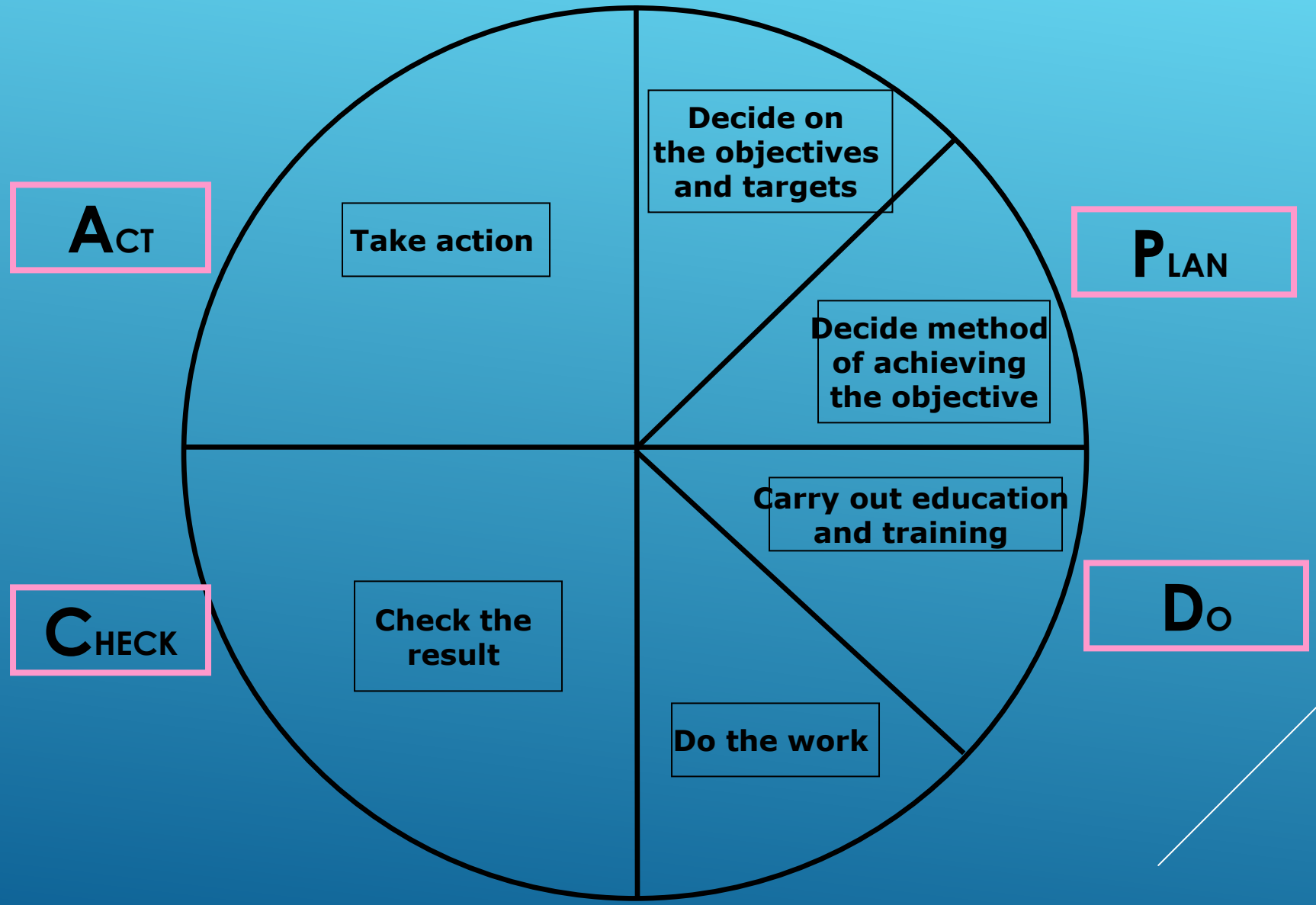
7. **PARETO CHART** **:** For identification /selection of major problems or area for improvement.

8. **SCATTER DIAGRAM :** Examining the relationship between two variables.

9. **HISTOGRAM :** For study of the process variation & access process capability.

10. **CONTROL CHARTS :** For maintaining running control on a process.

P D C A CYCLE


ACT
Take action
Decide on the objectives and targets
PLAN
Decide method of achieving the objective
Carry out education and training
DO
Do the work
CHECK
Check the result

Continuous improvement cycle Or DEMING Wheel

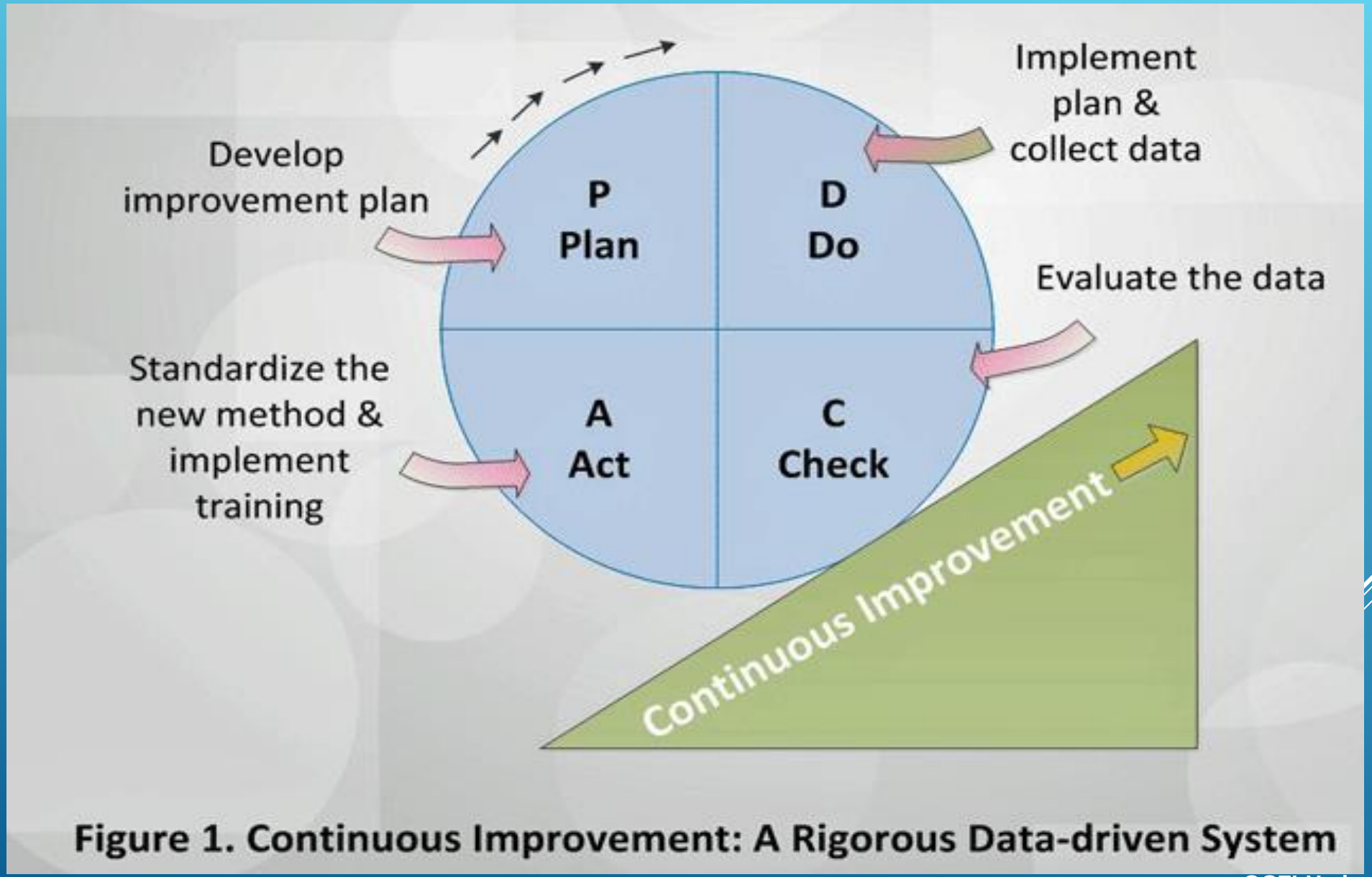


Figure 1. Continuous Improvement: A Rigorous Data-driven System

BRAINSTORMING

What is Brainstorming?

Brainstorming is a group technique for generating new and useful ideas.

It uses a few simple rules for discussion on a subject matter that contributes to originality and innovation.

Mr. Alex Osborn of USA , an American psychologist, developed this technique in 1950s to solve advertising and marketing problems.

Brainstorming is probably the best known technique and most widely used for idea generation.

By shop floor personnel,

Managers,

Politicians etc.

Methods of Brainstorming

Brainstorming can be done in three ways viz.,

- *Free Wheeling or Unstructured*
- *Slip Method*
- *Round Robin or Structured Method*

There are two types of thinking,

Convergent Thinking - Systematic and logical which leads to single or few solutions.

Divergent Thinking –Creative Thinking- is the process of creating many unique solutions in order to solve the problem.

We use both types of thinking whenever we want to generate ideas using brainstorming.

Mr. J.P. Guilford who conducted research on the creative behavior, identified Five key elements concerning Human ability to be creative.

1. FLUENCY

As we look for quantity over quality in Brainstorming, generating more ideas within a given time is important. It is found that more the quantity of ideas, more effective & useful ideas emerge.

2. FLEXIBILITY

Ability to simultaneously propose a variety of approaches to a specific problem.

This is the ability of a mind to move from one area to another quickly. In this aspect , the process of thinking helps. Another gain is that , in a group, people think divergently. When we listen to others, it opens up new avenues for our thinking. We call this hitch-hiking process.

Flexibility is measured by the no. of categories of ideas generated.

3. ORIGINALITY

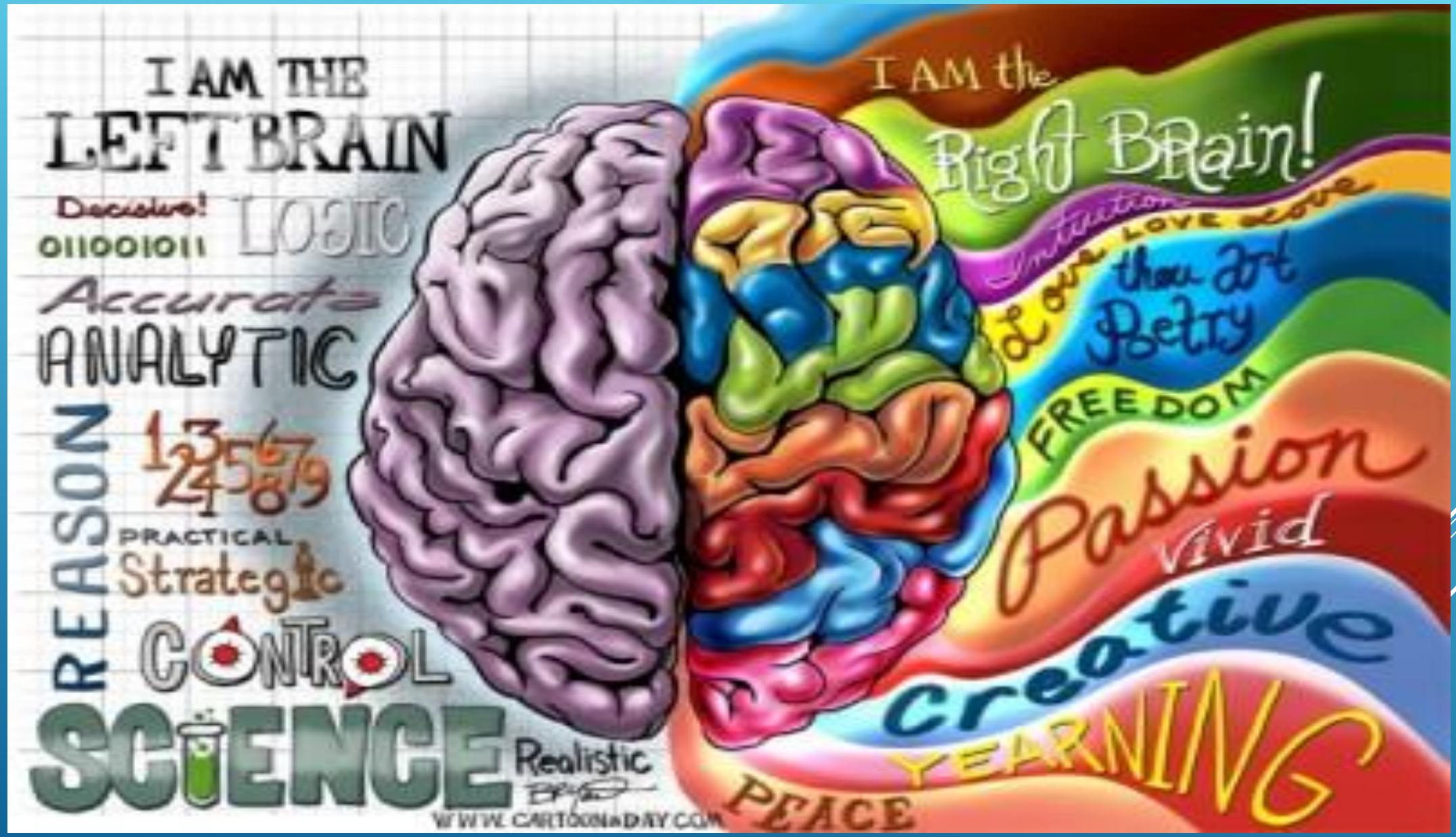
Thinking without any barrier & away from unconventional methods lead to originality in people.

4. AWARENESS

This is the ability to look into the future i.e. beyond the immediate facts, what can the need of future be?

5. DRIVE

This is a willingness to contribute to achieve the end goal without fear or failure.


I AM THE
LEFT BRAIN
Decisive!
01100101 1
Accurate
ANALYTIC
1 3 5 6 7
2 4 5 8 9
PRACTICAL
Strategic
REASON
CONTROL
SCIENCE
Realistic
WWW.CARTOONaDAY.COM
I AM the
Right BRain!
Intuition
Love Love Love
thou art
Poetry
FREEDOM
Passion
Vivid
creative
YEARNING
PEACE

LEFT BRAIN FUNCTIONS

- uses logic
- detail oriented
- facts rule
- words and language
- present and past
- math and science
- can comprehend
- Knowing
- Acknowledges
- order/pattern perception
- knows object name
- reality based
- forms strategies
- Practical
- safe

RIGHT BRAIN FUNCTIONS

- uses feeling
- “big picture” oriented
- imagination rules
- symbols and images
- present and future
- philosophy & religion
- knows object function
- fantasy based
- presents possibilities
- Impetuous
- risk taking

Many people associate the right brain with creativity and lateral thinking, and there’s certainly something to that.

Characteristics of persons participating in meetings

Sl.no.1	Types	characteristics
1.	Bull Dog	Fight for everything
2.	Horse	Agree for everything
3	Monkey	Thinks he knows everything
4.	Frog	Continuously talking
5.	Doe	Shy, rarely talk
6.	Pork pine	Always come up with some objections
7.	Hippo	No Response. Go with crowd
8.	Zeraffe	Superman-Knows all
9.	Fox	Putting dangerous questions

CAUSE AND EFFECT DIAGRAM

What is a Cause and Effect Diagram?

Any defect in a component, a product or service could be due to one or more causes.

To find out the relationship between the causes and effect, a diagram is drawn systematically by mapping out all the probable causes influencing the effect.

This is called a Cause and Effect Diagram.

This was introduced by Dr.K.Ishikawa. He used it in Kawasaki Iron Works in 1943.

Earlier, it was used for research work. This is also known as Ishikawa Diagram.

Since final diagram looks fish bone it is also called as Fish Bone Diagram.

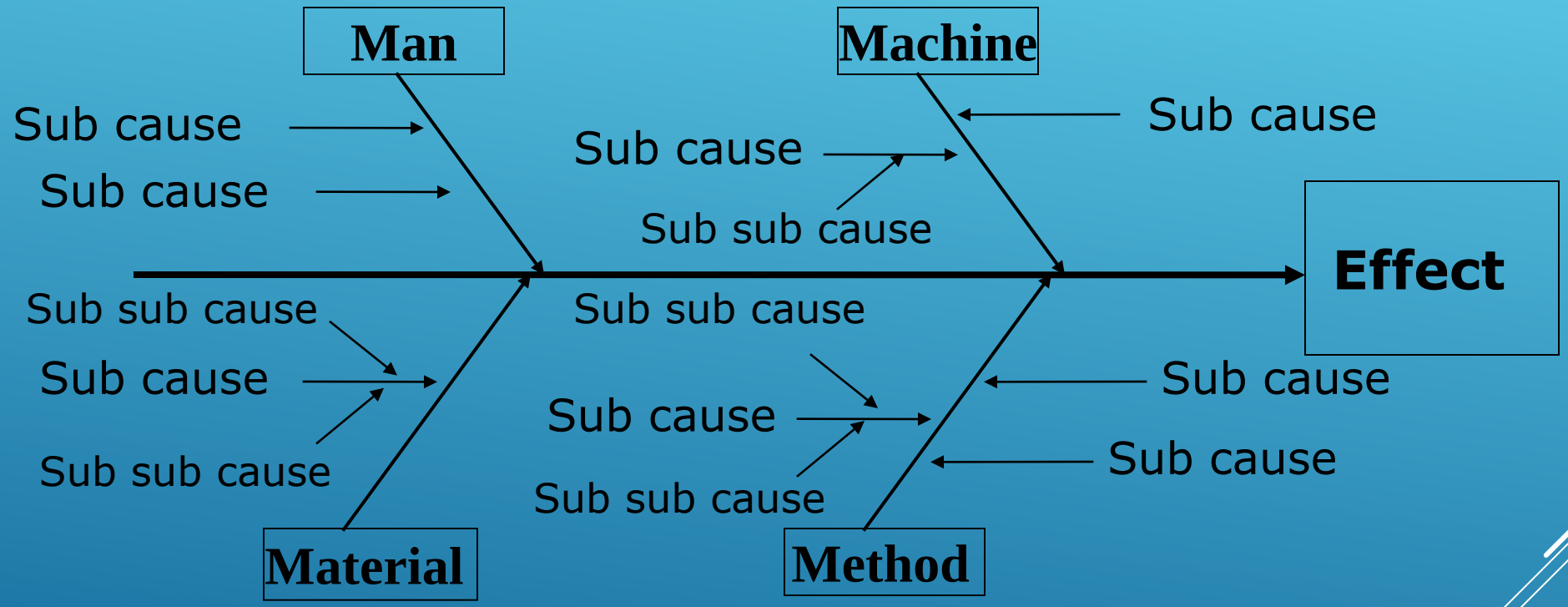
Looking into its usefulness Japan Standards Institute recognized it as a statistical tool.

How to make a Cause and Effect Diagram?

Even though it looks very simple, making a Cause and effect diagram is not an easy task.

One who wants to make a Cause and Effect diagram should first understand the Cause/effect relationship.

Cause & Effect diagram



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Hyderabad Chapter

Awareness of 5S
Work Place Management

WHAT IS 5S MOVEMENT?

"It is to organize the workplace and other connected areas to keep them clean and neat, to maintain standardized conditions and to maintain the discipline that is essential to achieve excellent environment".

5S's are like a mirror reflecting our attitudes and behavioral patterns.

Five “S” is a basic common sense approach to good workplace organization and management. Mr. Takashi Osada, a Japanese management expert, has developed this idea and has defined a logical sequence of 5S steps Viz.

Father of 5S – Takashi Osada

Japanese	English
1-S SEIRI	SORTING
2-S SEITON	SET IN ORDER
3-S SEISO	SHINE (CLEANING & INSPECTION)
4-S SEIKETSU	STANDARDISE
5-S SHITSUKE	SELF DISCIPLINE

SEIRI: (SORTING)

Sorting out necessary and unnecessary (including surplus, even if necessary) items and removing unnecessary items from the workplace.

SEITON: (SET in ORDER)

Logically fixing location for each necessary item and keeping the item at that place only. In other words, PEEP “Place for Everything and Every thing in its place.”

SEISO: (SHINE OR CLEANING & INSPECTION)

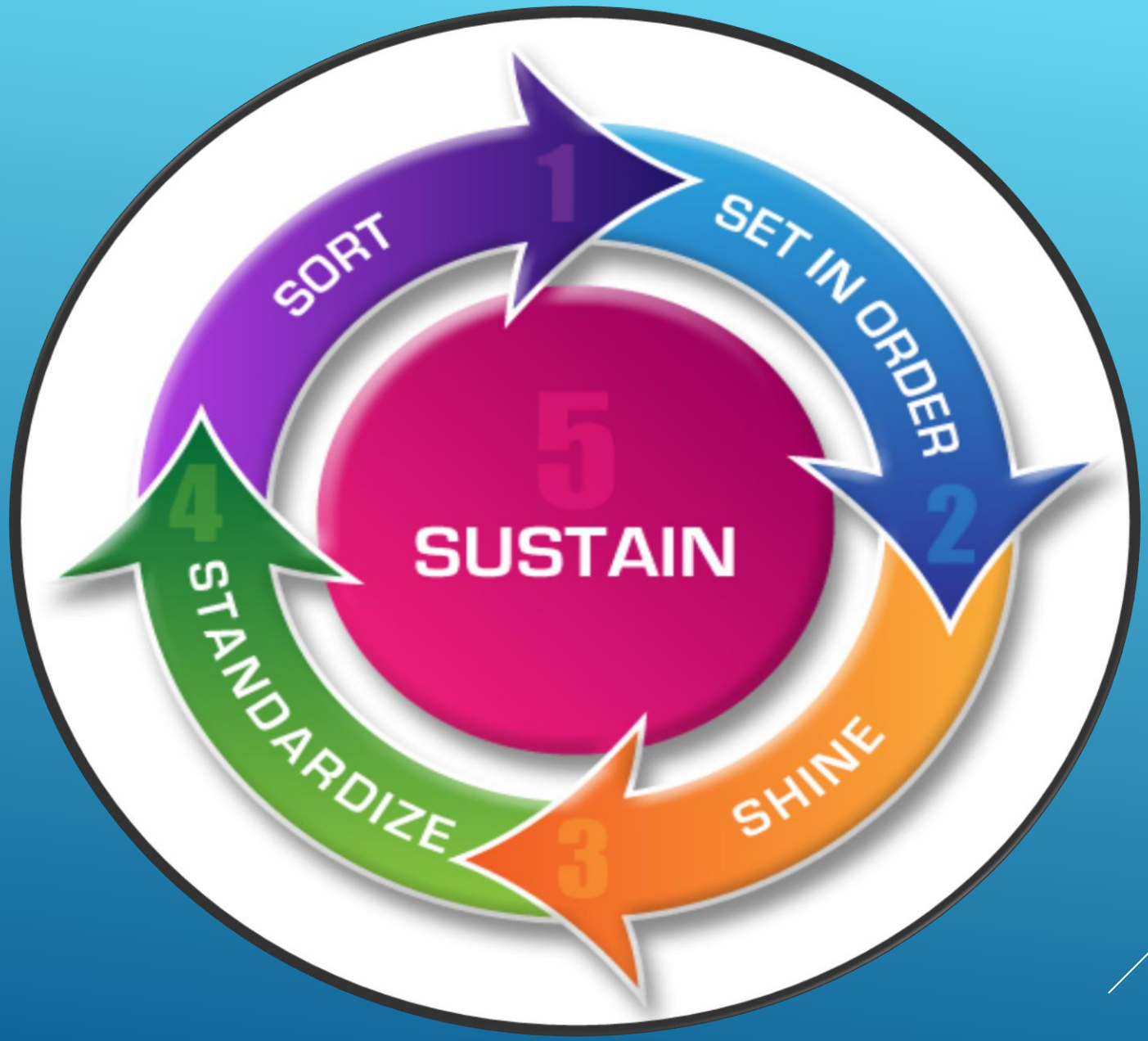
Through scientific and periodical cleaning, we are inspecting items and keeping the useful items in proper way. This means during cleaning we are doing inspection. Hence SEISO is nothing but the combining activities of SEIRI and SEITON along with cleaning.

SEIKETSU: (Standardize)

Develop a system and standardize to improve the activities of above 3 steps. The work becomes easy by solving the problems. Develop a visual management system for easy understanding.

SHITSUKE: (Self Discipline)

Discipline means what ever systems are developed to improve upon first three steps and standardize in fourth step must be followed repeatedly so that **Five "S" becomes a habit, a way of life.**


1
SORT
2
SET IN ORDER
3
SHINE
4
STANDARDIZE
5
SUSTAIN

OBJECTIVES

- To achieve effective use of space / working area.
- To eliminate wastage of time in searching of items.
- To create a pleasant work place.
- To inculcate leadership qualities and participative culture among all.
- To avoid wastage of resources such as electricity and water
- To enhance safety in the workplace.
- To inculcate ethical and moral values and pave the way for ‘Swatch Bharat’.

Vidya Mandir School- Class Rooms

Vidya Mandir School - Cupboards & Cabinets

Vidya Mandir School - Cupboards & Cabinets

CHEMISTRY LAB

BIOLOGY LAB

STAFF ROOM

AUDITORIUM

Vidya Mandir School- Sports Room

5S Pledge
at our Learning Center - SCHOOL

TODAY ON THIS DAY OF July 11th 2019, we solemnly

Pledge to follow the principles of 5S - Work Place Management viz. Seiri, Seiton, Seiso, Seiketsu and Shitsuke

Not only in my school, but also in my house and in our

Neighbourhood by following the path of self discipline.

DIESEL LOCO SHED, KAZIPET

SEIRI (Sorting)

SEITON (Systematic)

SEISO (Cleaning)

SEIKETSU (Standardize)

SHITSUKE (Sustain)

Welcome to the 5S Journey at DLS/KZJ

- **Diesel Loco Shed, Kazipet** spread over 6.03 hectors (61,000 sqm) is in the service sector providing **“Preventive Maintenance and Repair services to diesel locomotives and overhauling of Assemblies/ Sub-assemblies”**

- **Five-S** is a **systematic approach** which can bring **improvement in cleanliness and orderliness in workplace.**

- Five S is a basic step in our journey towards Total Quality Management. Good housekeeping helps in improvement in the performance of services rendered leading to low cost and better quality.

- Better workplace will give better working environment. This also changes our outlook and behavior.

WORK PLACE MANAGEMENT

1S SEIRI RE-ORGANISE → SORTOUT → NECESSARY
SORTOUT → UNNECESSARY → SCRAP
SCRAP → REPAIRABLE
REPAIRABLE → EXCESS MATERIAL
EXCESS MATERIAL → BELONGING TO OTHER DEPT.

2S SEITON NEATNESS → PEEP

3S SEISO CLEANING → INSPECTION

4S SEIKETSU STANDARDISATION → VISUAL MANAGEMENT

5S SHITSUKE DISCIPLINE → MAKE IT A HABIT

WHY 5S AT DLS/KZJ

- **For effective work Place Management** through implementation of 5S principles.
- **To create enough space at working area** by disposing off the unnecessary.
- To facilitate **easy and quick access for material** & maintenance.
- To ensure Optimum utilization of resources.
- **Ensuring clean and safe working atmosphere** to the working employees by enforcing usage of Personnel Protective Equipment by all the staff while on duty to avoid accidents and injuries.

5S AWARENESS - TRAINING PROGRAMME

- Introductory meeting on 5S by M/s QCFI on 01-12-2016

5S AWARENESS - TRAINING PROGRAMME

- On 15-05-2017 an open meeting was held to sensitize the employees on 5S and pledge was taken.

5S Implementation - Working Committee

- CEO is the Chairman of the Steering Committee, he nominated Dept. heads as members

5S IMPLEMENTATION - STEERING COMMITTEE

- Working committee is also nominated by CEO

5S IMPLEMENTATION - FORMATION OF ZONES

- The DLS Kazipet which is over a span of **6.03 hectors (61,000 sqm) has been divided into 23 zones** for effective implementation of 5S.
- **Each zone is headed by a zone leader** who is responsible for implementation and sustenance of 5-S in his zone.
- **Each zone is further divided into sub zones** as per the requirement based on the no of activities/functions performed in that zone.
- The **zone leader fixes responsibilities to the sub zone leader** and to each of the staff working in that zone.
- The **zone leaders ensure that proper awareness training programme** is provided to all staff and its effectiveness is discussed on daily basis.
- **5-S display boards & posters** are displayed at prominent places.
- The following zones and sub zones are formed along with the zone leaders as nominated against each zone.

5S IMPLEMENTATION JOURNEY

SEIRI (Sorting) → SEITON (Systematic) → SEISO (Cleaning) → SEIKETSU (Standardize) → SHITSUKE (Sustain)

- **Sort out the necessary and unnecessary.**

Red Tag Strategy

- **Transfer of Unwanted material to Red Tag Area**
- **Inspection By Coordinator & Zonal Leader**
- **Decision To Repair/Reject/Transfer The Red Tagged Item**
- **Assessment of Value of Rejection**

- **During 1-S implementation unwanted scrap disposed off**

- **From April-2017 to September-2017**
  - **Ferrous Scrap :167.83 Tons.**
  - **Non -Ferrous Scrap :6.66 Tons.**
  - **Also lot of space were created in zones.**

SEIRI (Sorting) → **SEITON (Systematic)** → SEISO (Cleaning) → SEIKETSU (Standardize) → SHITSUKE (Sustain)

- **DECIDE AND ORGANIZE WHERE TO KEEP NECESSARY ITEMS**

- Materials kept in Plastic boxes for easy accessibility
- PEEP methodology (A Place for Everything & Everything in its Place)

SEIRI (Sorting) | SEITON (Systematic) | SEISO (Cleaning) | SEIKETSU (Standardize) | SHITSUKE (Sustain)

- Inspect the work area and equipment, with an emphasis on health and safety.
- Identify areas needing attention such oil leaks, frayed belts, excess grease, peeling paint.
- Itemize required materials such as cleaners, degreasers, paint, etc.
- Itemize work required & develop schedule

- Cleaning of areas

SEIRI (Sorting) → SEITON (Systematic) → SEISO (Cleaning) → **SEIKETSU (Standardize)** → SHITSUKE (Sustain)

- Establish SOPs & maintenance work instructions for the workplace.
- Standardization of tools & workbenches.
- Create schedules and checklists that define required activities and responsibilities.
- Establish “visual controls” (sign-boarding).
- Establish procedures for maintaining & sustaining 3rd S –Shine/Cleaning.

Standardized tools in each section

Standardized Work benches

- Officers, Supervisors, and staff must be committed to establishing & maintaining the 5 Ss
- Adhere to first 4 S categories.
- Set practical goals and giving adequate feedback to all.
- Implement a discipline for culture change to maintain the 5 S concepts
- Establish & promote routine audits to sustain.
- Each zone leader prepares a audit check list specific to his/her zone.
- A meeting is convened with all the zone members every month to review the progress of 5-S implementation and the minutes of the meeting are recorded.

STANDARD PRACTICES

- Red Tag Area is identified for placing red tag items and monthly review of the items in red tag area is done and disposal procedure is followed.
- Unwanted items are segregated and disposed once in a week by each zone.
- Parking places are designated and vehicles are parked in the area designated only.
- Up keep of all visual aids like labels, direction boards, display boards are maintained.
- Cleaning schedules are prepared and adhered to Status is marked.

Benefits derived

- Scrap earnings : Ferrous Rs.30,20,940 /-

(Apr'17 – Sep'17) : Non Ferrous Rs.16,65,000 /-

Total earnings Rs.46,85,940 /-

- Optimum utilization of material
- More Work space created
- Clean & safe work place
- Ease of material traceability & retrieval

KAIZEN

The Practice of Continuous Improvement.

Kai

(change)

Zen

(good)

INTRODUCTION

- Masaaki Imai conceived and developed the idea of KAIZEN.
- “KAI” means “change or the action to correct”.
- “ZEN” means “for better”.
- KAIZEN means improvement. Improvements without spending much money, involving everyone from Managers to Front line employees and using much common sense.

3 Main Principles of KAIZEN

1. Consider the process and results.

2. The need to look at the entire process of the job at hand and to evaluate the job as the best way to get the job done.

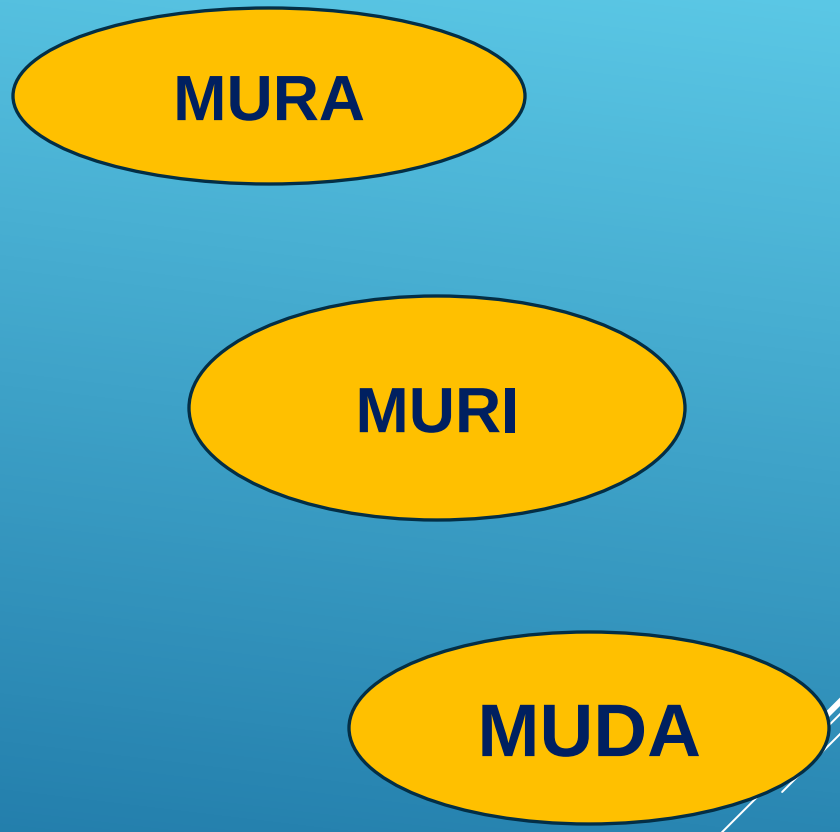
3. Kaizen must be approached in such a way that no one is blamed and that best process is put in place.

Feature of Kaizen

- Widely applicable.
- Highly effective and result oriented.
- A learning experience.
- Team based and cross functional.

❖ Methodology.

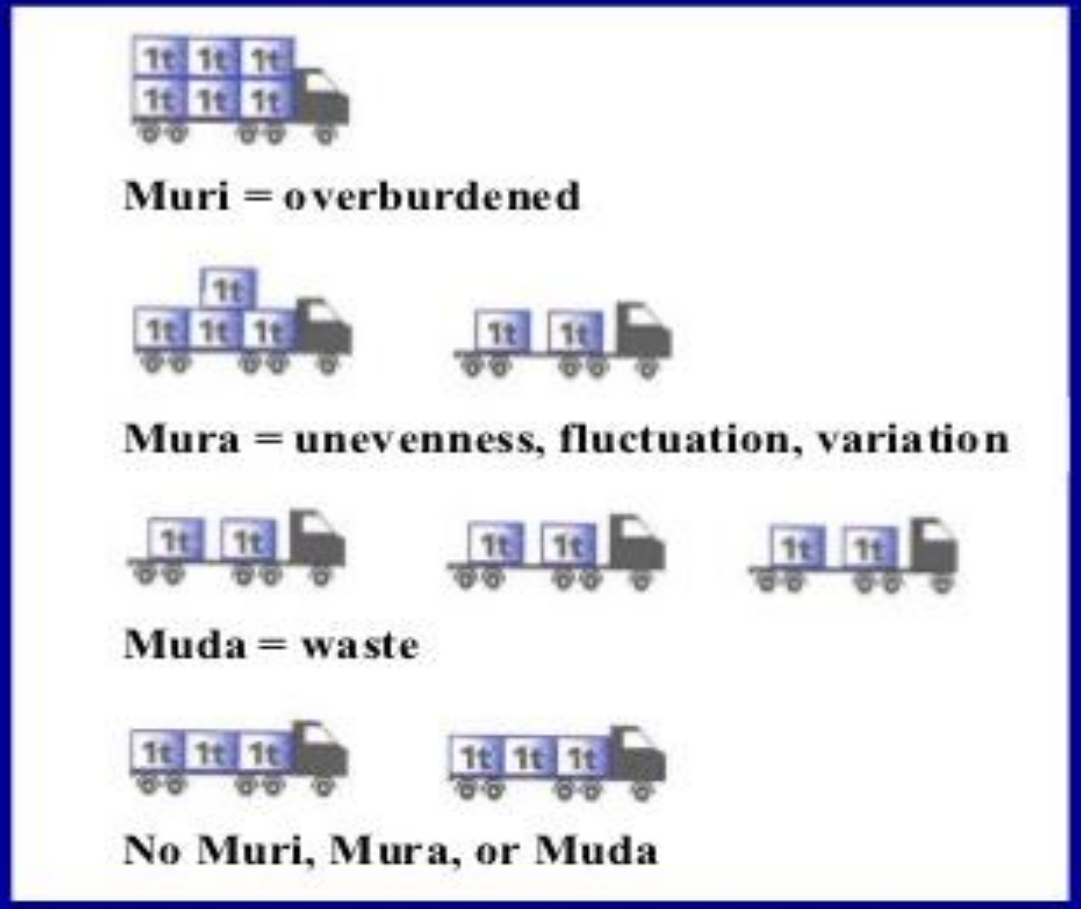
- Finding out the pain area.
- Analyze the pain.
- 3Ms considered with 4Ms.



- 3Ms – Mura, Muri and Muda.
- 4Ms – Man, Machine, Material and Method.

Muri, Mura, Muda

- *Muri*
  - Strain, difficulty, hard to do
  - Overburdening equipment or operators by requiring them to run at a higher or harder pace with more force or longer period of time than equipment design or management allows (ergonomics)
- *Mura*
  - Irregularity, variability
  - Unevenness or fluctuation in a production plan, operation or an uneven work pace in an operation causing operators to hurry and then wait
- *Muda*

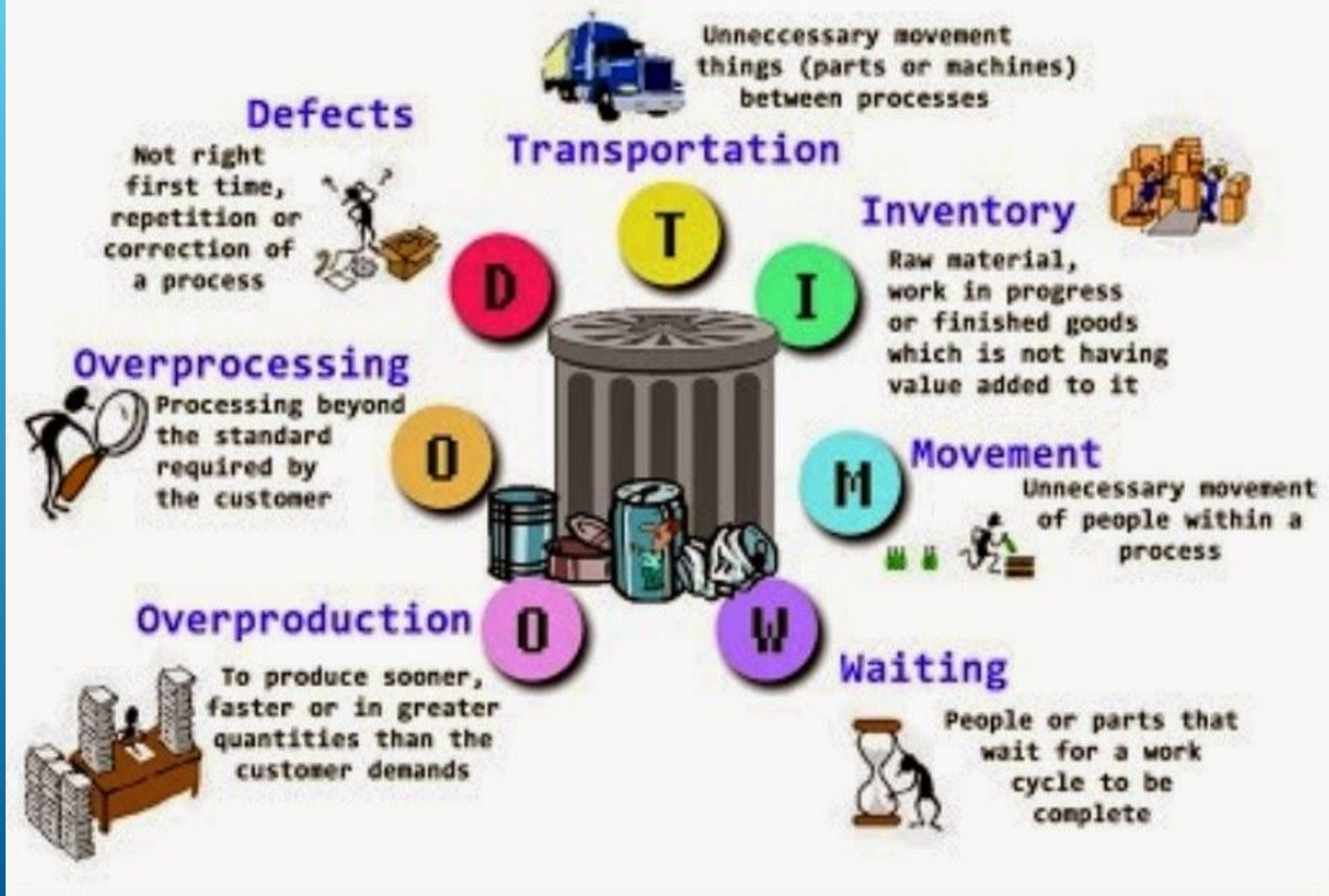


Kaizen Elements.

- Team work.
- Personal discipline.
- Improved morale and quality.
- Suggestions for improvements.

Benefits of Kaizen.

- Kaizen reduces wastes like inventory waste, time waste and workers motion.
- Kaizen improves space utilization and product quality.
- Kaizen results in higher employee morale and job satisfaction.
- Kaizen teaches work force how to solve everyday problems.


Defects
Not right first time, repetition or correction of a process
Transportation
Unneccessary movement things (parts or machines) between processes
Inventory
Raw material, work in progress or finished goods which is not having value added to it
D
T
I
O
M
W
Overprocessing
Processing beyond the standard required by the customer
Movement
Unnecessary movement of people within a process
Overproduction
To produce sooner, faster or in greater quantities than the customer demands
Waiting
People or parts that wait for a work cycle to be complete

Pit Falls in Kaizen.

- Resistance to change.
- Lack of proper procedure to implement.
- Too much suggestions may lead to confusion and time waste.
- Difficult to implement in large scale process, where analyzing requires a lot of time.

Kaizen vs Innovation.

Kaizen	Innovation
Un dramatic	Dramatic
Low cost	High cost
Low risk	High risk
Human effort	Technology
No brainer	More thought

Kaizen helps You to :

- **See the waste.**
- **Turn problems into profit.**
- **Constantly change for the better.**

Success story from Usha International Hyderabad

KAIZEN IDEA - SHEET		PERFORMANCE INDICATOR	P	Q	C	D	S	M
Ref No:	SF/17/K-671/UN-38							

USHA SH

PLANT : SFII

OPERATION : Paragon Angular Grinding Machine-Needle

DEPARTMENT : Nozzle Usla

4. IDEA : Between Centers Holder Developed For Needle Seat Grinding Operation

1.KAIZEN THEME:

To Reduce the Rework of Seat Grinding in Nozzle

2. PRESENT STATUS :

Seat TIR Observed More 0.005mm as against the specifiction of 0.001 mm

WHY-WHY ANALYSIS :

Why1: Why Rejections Are high in Repe

Needle Seat TIR More than 0.005mm

Why2: Why Needle Seat TIR More?

Part rotating ecentric while grinding

Why3 : Why part rotating eccentric whil

Parts Holding At Chuck In Guide Dia

Why 4: Why parts holding in Chuck.

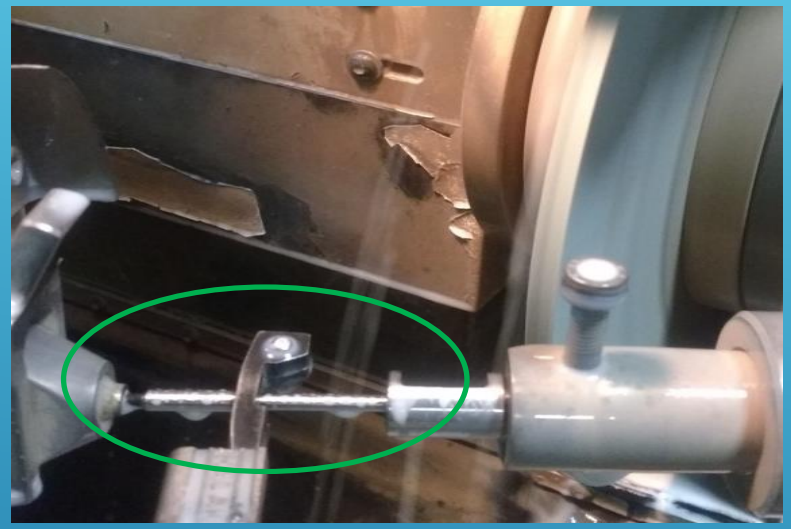
Provided in the machine tool builder

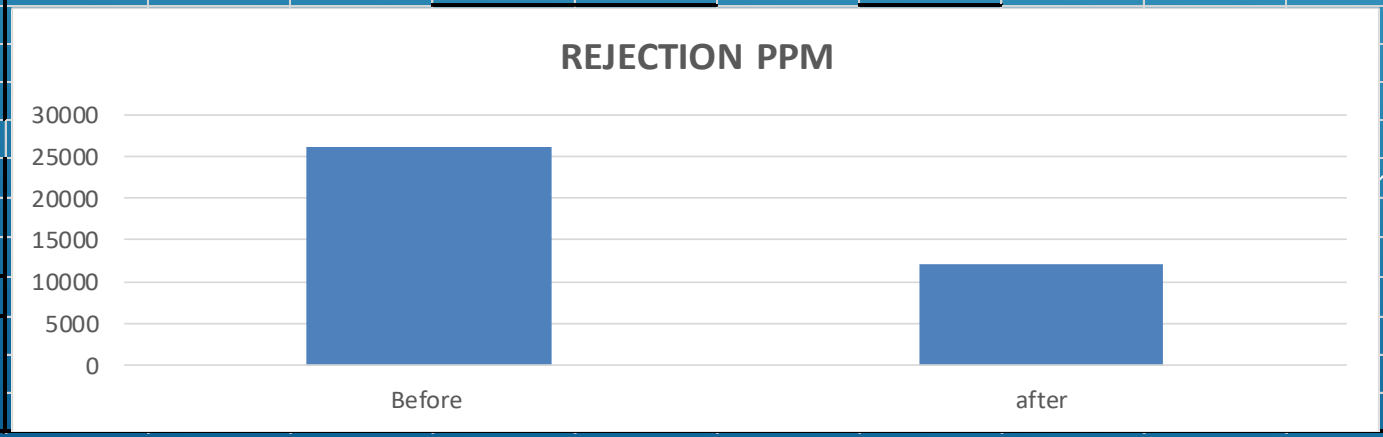
ROOT CAUSE :

Clamping in Chuck method is causing for rotating part eccentric

Before

After





Target :

Kaizen Start :10-8-2018

Kaizen Finish: 27-09-2018

SATHESH

P.VINODH

BENEFITS

1.Rejections Reduced

2.Quality improvement

TQM

When we say Total Quality Management, we mean a new approach to improve product quality and increase customer satisfaction on a continuous basis by restructuring traditional management practices.

The main features of TQM are

a) Customer driven quality

b) Strong Quality leadership

c) Continuous improvement

d) Action based on facts, data, and analysis

e) Employees participation

f) Improved two way communication system (top to bottom and bottom to top)

TOTAL QUALITY CONTROL

- Quality Development,
- Quality Maintenance,
- Quality Improvement

- TQM effort embraces TEI, in improving products services, processes and culture.

- In simple terms, TQM is a set of management practices throughout the organization geared to ensure that the organization consistently meets or exceeds customers requirements.

- The paradigm shift caused in relation to Customer focus, cross functional management, continual improvement, and empowerment are highlighted.

Customer focus is no longer tunnel vision as it used to be. Now customer focus operates on a wider basis.

- An intense market and customer orientation
- Recognizing the intended needs of customer
- Customer feedback
- Cross Functional management.
- Continual improvement

“ Q” in TQM means that Quality has to be found in anything the management does in every functional area right from gardening, security, canteen to dispatch and customer relations as per quality rules.

- Doing Right – First time
- Right on Time
- Right – On time – every time
- By every - one
- In every – job/activity/operation

“T” in the TQM stands for TOTAL to mean Quality is not mere quality of products and services offered to customers, but cover the issues of safety, occupational health and pollution as under,

a) Quality products and services which ensure safe, satisfactory performance at users end through their expected life span.

b) Quality of all processes involved are defect free, safe, reliable and causes no job related health hazards.

c) Quality of environment – air, water, land - the processes that operate should not cause pollution to the environment and thus there is no threat of pollution to the society.

TQM

- In Short TQM = QM X QA X QIT X QC
- Further you can see the first 3 elements are controlled by management
- The absence of any element in the equation on the right hand side will reduce the TQM efforts to “ZERO”

TQM

- Let us see what is Quality?
- Quality is the totality of features and characteristics of person, product or services, that bear on its ability to satisfy stated or implied needs to the customer.

To day every enterprise is facing the following four problems.

Problem	Solution
Customers: Becoming more knowledge-able, Critical, Discriminating, Demanding	Quality: Continuously understand to meet customer requirements
Competition: Diverse and intense	Quality: Adopting newer ways of reaching and retaining customer – price, quality, service
Cost: With no scope for sale price revision.	Quality : Reduce quality losses to offset cost increase
Crisis: New Regulations New technologies New tie-ups	Quality: Be on top to command goodwill, reputation, and reliability Continual improvement – Macro as well as Micro.

Formulate Quality Systems on sound principles of Quality Management

UNDERSTANDING THE BASICS OF QUALITY

Definitions

What is Quality?

"Quality is conformity to specifications" - Dr. J.M. Juran

"Quality is fitness for use" - Dr. J.M. Juran

"Quality is always satisfying the customer needs -Product or Service" - Dr.K. Ishikawa

"Quality is doing a thing right first time" - Philips B. Crosby

- "Quality is producing products or services consistently and constantly and improving them to satisfy the customers".

  - Dr. W.E. Deming

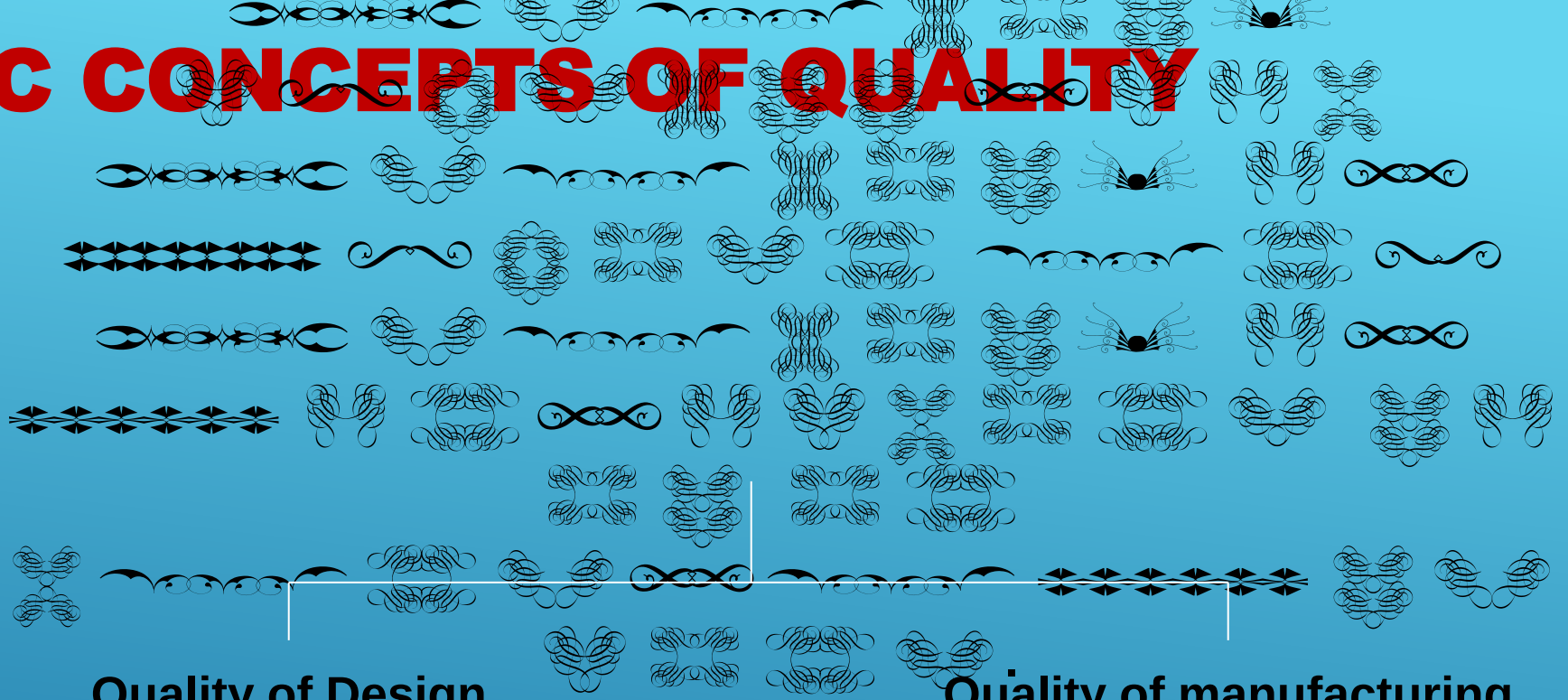
a) "Quality is the degree to which a set of inherent characteristics fulfils requirements" - ISO 9000 - 2000.

b) Inspection - Segregating good & bad

c) Quality Control - A defect prevention activity

d) Quality Assurance - A certification, assuring Quality of products or services to the customer.

BASIC CONCEPTS OF QUALITY



Quality of Design

Quality of manufacturing in conformity to design specifications

Product one

- **Design - 1**
- **Design - 2**

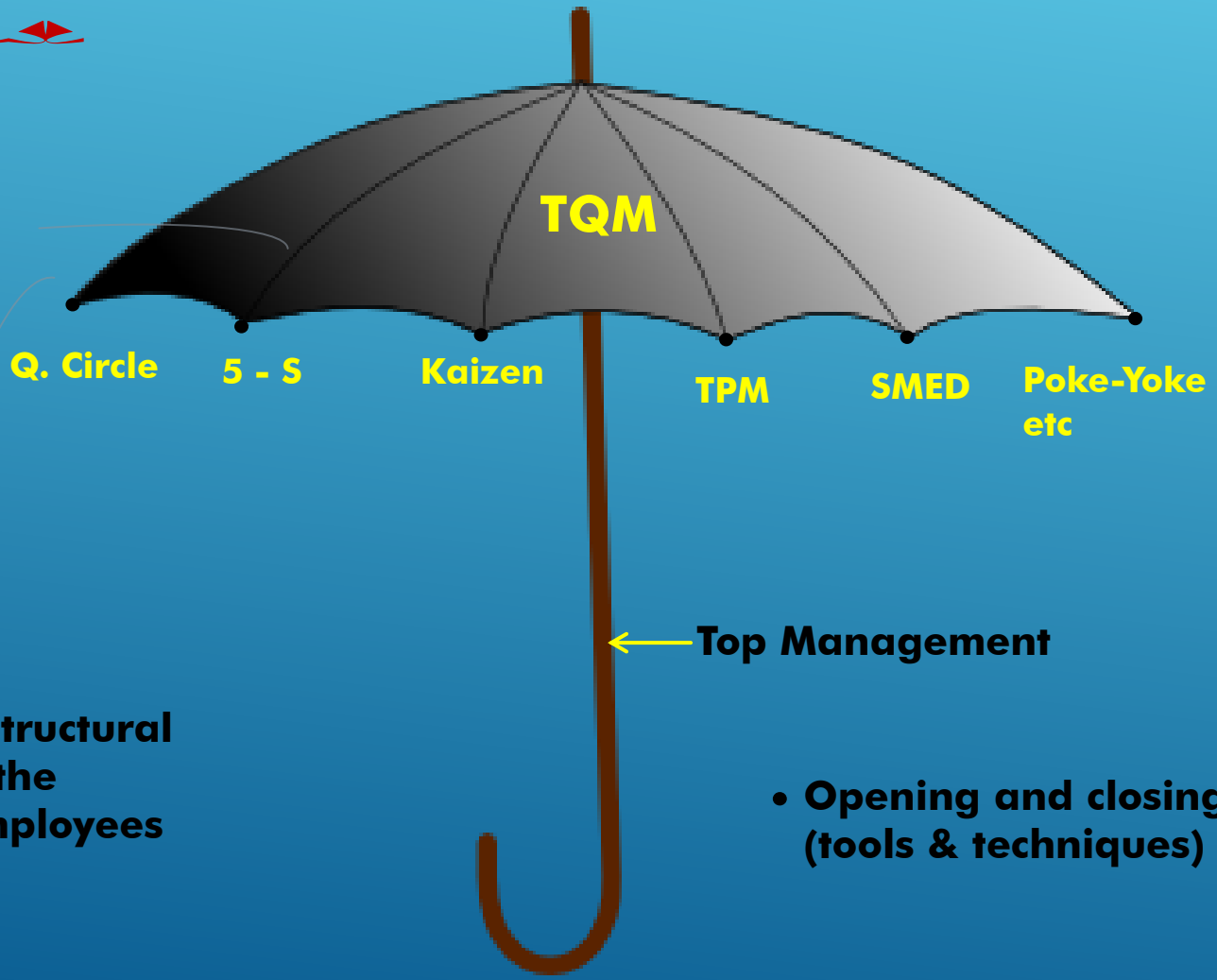
One product can have different designs for example CARS.

Characteristics of good design and manufacturing are:

* Repeatability and * Reproducibility

Quality of products manufactured will depend on:

- Quality of raw material
- Quality of processes
- Quality of machines and tools
- Skill of operators
- Knowledge and experience of operators
- Quality control, measurement and feed-back



Supporting structural elements in the Umbrella employees

- Opening and closing device (tools & techniques)


Thank
You