

The Japanese "MONO-TUKURI" is based on Japanese culture.

(1) Much man lives in a small country. Mutual cooperation can't help be done.

* People behave by their company=Oriental "World feeling" and authority respect.

An alien substance (=Difference) is excluded.

* They live at the same place=Mutual understanding is indispensable=

They cooperate and behave deliberately.

* They don't like sole winning and dictatorship= Council system= Bottom-up.

* They evade Reform and prefer Improvement= It'll be sometimes the "Galapagos Islands phenomenon"= When a Change happens, it's to a sudden

Change/Revolution!

(2) Country with a change in four Seasons

* Nature is liked= Bonsai culture= Light. Thin. Short. Small.

* It's delicate and minute and combination is liked= It's devised." Indiscriminate imitation" is spurned.

* The Buddhism= Sense of mortality= Pitiful= "Vacancy"= It isn't Steering to System", just Completion form by one. Master-hand and craftsmanship are liked.

(1)

T. Miyamoto

What is Management?

1 The Purpose of Management

- ① A useful one for the customer is offered. ← Finding out at [GENBA], Useful one is changing always.
- ② Thinking ahead ; Break down to a concrete action plan ; Cooperate in all members ; They act by themselves thinking.

2 Matter necessary for management

- ① The Medium term plan is needed for proceeding three years. ← Everything cannot be done all at Once.

It is necessary to advance the accomplishing Objective **gradually step by step.**

[Where do you go? For what, do you act so? Why is the method adopted?]

[The Intellect wins the long term war though Spirit wins the short term war.]

- ② The **numerical Targets and the strategic/correct Measures** are needed. → Because of, what part of the plan were you done already? What is not made? , cannot be recognized. → And then, How to be going to act in the future cannot be understood.

- ③ The Enterprise and the Organization grow up Step by Step. ← It collapses if **the Base** is not made firmly.

- ④ It starts from the **Personnel Training and Education.** → For oneself no others. → It is possible to act for oneself by thinking Independently. → It is a **Purpose to make the Environment to which Bottom Up can improve. A bottom=GENBA knows the fact which keeps changing best.**

[Team Play cannot be done if he is I type but T type man. The common peoples with whom they cooperate than the Genius who is isolated are stronger/effective.]

[1st; they know. 2nd; It is possible to do one for oneself. 3rd It is possible to educate another.

The person grows up in such order. The person's evaluation is an Action to find out Items for whom the education is necessary.]

3 Importance of Motivation

- ① **It is Man that actually acts.** It couldn't be in the Logic/Theory or Plan.
- ② The Purpose (Dream) can be understood, Each other can be seen, It can be understood that the Leader is one's ally, then All members cooperate in a little difficult plan if it

does so. (←Man can pretend to do his duty so hard, if he want. And it is difficult to distinguish through that it is a Lie.)

→**To all members, [Plan; Target; Current state; Result; The following action] are appropriately must be informed.**

③The man of power must **give “Chance”** to subordinates to raise their Ability and Confidence.

And manager must **arrange the work Environment** for subordinate who works easily and effectively.

It is because only the man of power can do so. **The subordinate cannot do**, even if they hope who know GENBA best.

End

(2)

T. Miyamoto.

Administrative Activities and Current state

1 Globalization

1) The competitive setting extends more and more and is rapidly.

What is the Bankruptcy of KODAK Co, Ltd?

2) China and South Korea are rising and fighting to Japanese business power.

Progress of Modulation and Innovation on Technology is increasing rapidly.

3) Change/Re-structuring of Business.

Which of QCDS, are you fighting/contributing back? Where is your business position?

4) Past->Present->Future (Each span is 3 years).

Look 3 years ahead. Set time setting bomb.

5) Induction method/Deductive method.

“Target setting” uses a deduction, “Achievement method” uses induction.

2 Dubt for “Ability of enterprises; Significance of existence”. (Fall of a prestigious company.)

1) Customer’s Trust = problem solving of the customer.

2) Demand for quality and fitting quality.

3) Many enterprises for 100 years over more are in Japan. Reason why?

A business is being changed according to the social/customer request or needs. Ability to follow changes.

4) Who hasn’t Significance of existence in social system couldn’t be exist.

5) Increasing & keeping of Added Value.

6) A strong point of business must to be much stronger.

7) Importance of effectiveness Design of application (applied type of SONY audio).

8) Be Continuous Business.

9) Compare with outside or oneself. Discovery of weak points.

10) The action couldn't arise in the place without the Target/Desire.

It’s just making the “Mannerism”, if isn’t there.

11) If the structure is understood, it is possible to guess/estimate the future.

Then, can get countermeasure.

12) In the long war (=strategy), Logos & short war (=tactics) is Pathos.

13) The activity of depending on a person will be collapsed (It is not organizational operation).

14) Organizational activity is built on Visible Open.

15) The organized common persons defeats one Genius.

16) The real world is the world of relativity.

3 Productivity improvement(Elimination of MUDA; Shortening Time;Wide area optimization)

- 1) Variety reduction (=difference decrease).
- 2) Repeat-ability must be increased.
- 3) Standardization.
- 4) Prevention to fixation (grasp changing User Needs).
- 5) KAIZEN.
- 6) Improvement of Process.
- 7) 4M(Man, Machine, Material, Method)
- 8) 5 GEN.(GENBA, GENBUTSU, GENJHO; GENRI, GENSOKU)
- 9) 2S. 3 TEI. (SEIRI, SEITON; TEI-ICHI,TEI-HIN,TEI-RYOU)
- 10) DARARI. (MUDA, MURA, MURI)
- 11) It couldn't understand without Layer.

Classification is the way to find out correct causes/targets.

- 12) 5S and QCC are the organizational movement theories not for improvement.
The purposes of activity are rule obeying and team play.
- 13) Don't promise not to be able to act. The promise to act must be kept.
- 14) Explanation and Excuse are another, quite difference.
- 15) Self-responsibility, not be others responsibility.
- 16) 5S, for showing to others is not correct. What do you build on 5S? "5S" is just basement.
- 17) Knowing and being possible to execute/act are quite difference.

4 PDCA

- 1) Feedback Cycle.
- 2) Viewpoint of Making a Plan.
There must be leading Target/Desire/Hope. Just solving problems at hand can not be a big step forward.
- 3) Advancing preparation (=not incident following).
- 4) SDCA vs PDCA.
- 5) Information, to inform correct is putting out person's responsibility,
but its value judges by receiver.
Use receiver's word. Begin with the affirmative word, not negative.
- 6) Fighting/struggling friends are the reliable friends on next time, because he had his opinion firmly.
- 7) It takes 3 years look down to understand well to the subordinate,
but it is only 3 days to look up the boss from the under and acknowledge. (What does it mean?)

(3)

T. Miyamoto

QM& ORGANIZATION MANAGEMENT

0. Foreword.

1) Understand the iceberg under the water surface.

(At Japan, Understand the thing/matter/idea/meaning/culture which supporting being visible on the water surface.)

2) Know Why> Know How. For What > How to.

1. QM(Quality Control < Quality Management< Quality Assurance)

1) Narrow view point (The quality of a manufacturing site is improved.)

Decrease of defect flood to outside. => Improvement of Process =>QC story & QC 7 tools <=

4M.

2) Broad view point (The product/service of an organization must be fitted to a market/customer.)

-1. What was made is sold< What selling is made<What sold is made.

Convenient thing (not troubled even if there isn't exist) could not sell< Products unavoidable if not exist sells.

-2. A market looks like a pyramid shape/form. Each has its own characteristics

(Three-layer structure=Top/middle/low; less/moderate/much; expensive/convenient/cheap)

2. Management(What its Target)

1) Increase the Added Value.

-1. Improving Productivity = Decrease 7 Muda.

-2. Expand the business sector/area. Consider with Matrix chart of Technology and Market.

Write Vintage Chart. Act and Advance with Planned Step. Progress Step by Step.

-3. Quality management is done to increase the degree of conformity between products and markets.

2) Control & Manage (These are quite different attitude/action.)

3) KAIZEN

QC story; PDCA (=Feedback cycle) + 3 years Plan (=Look/forecast/imagine forward 3 years and making Plan)

4) Organization

-1. Leadership + Organizer + Motivator + Coordinator in Operation.

-2. The person employed with money escapes with another person's money.

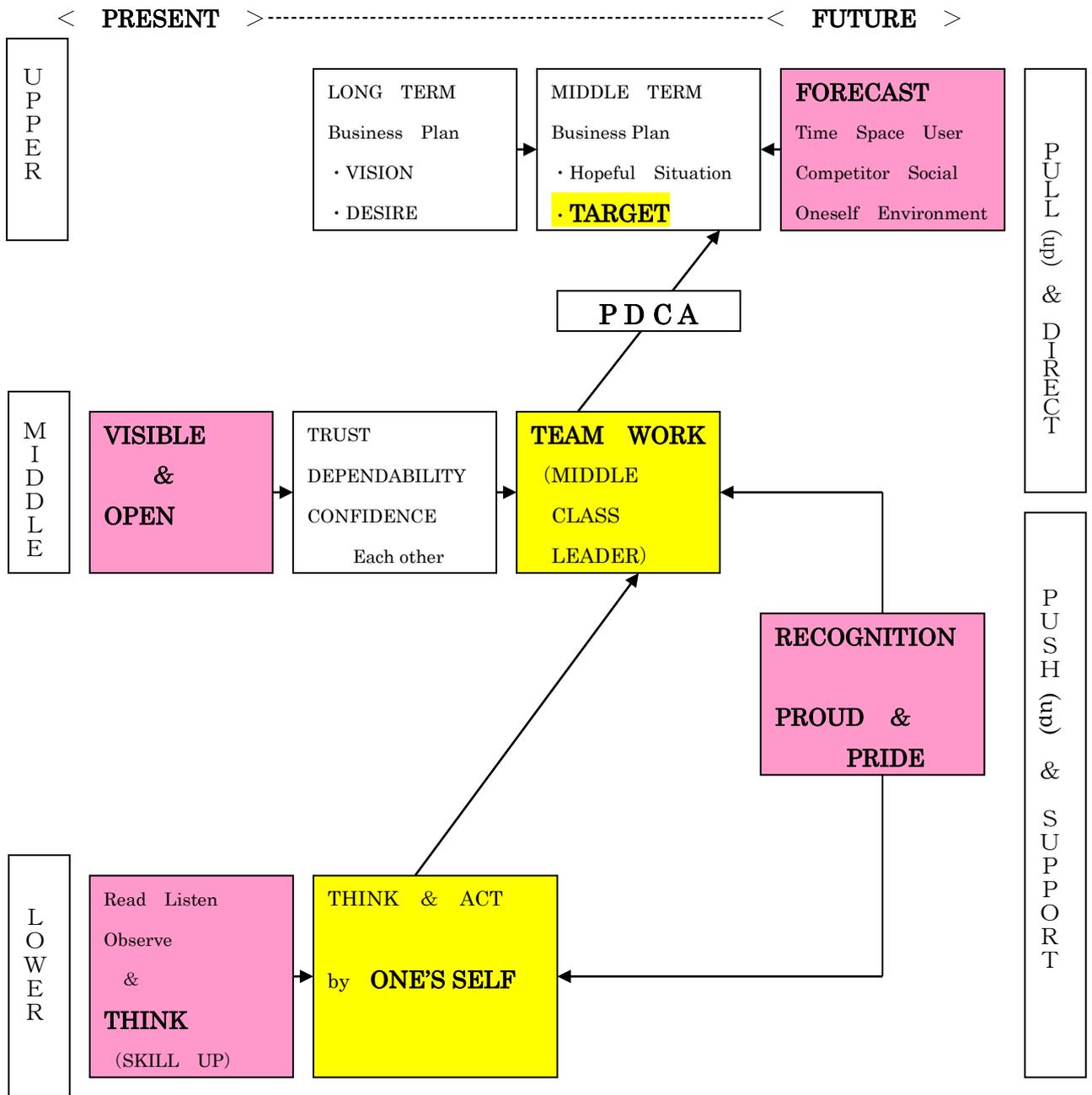
The person with the same purpose/idea/philosophy does not escape but collaborate with you for Progress.

-3. Visible & Open

For to make TRUST; DEPENDABILITY; CONFIDENCE mutual Each other.

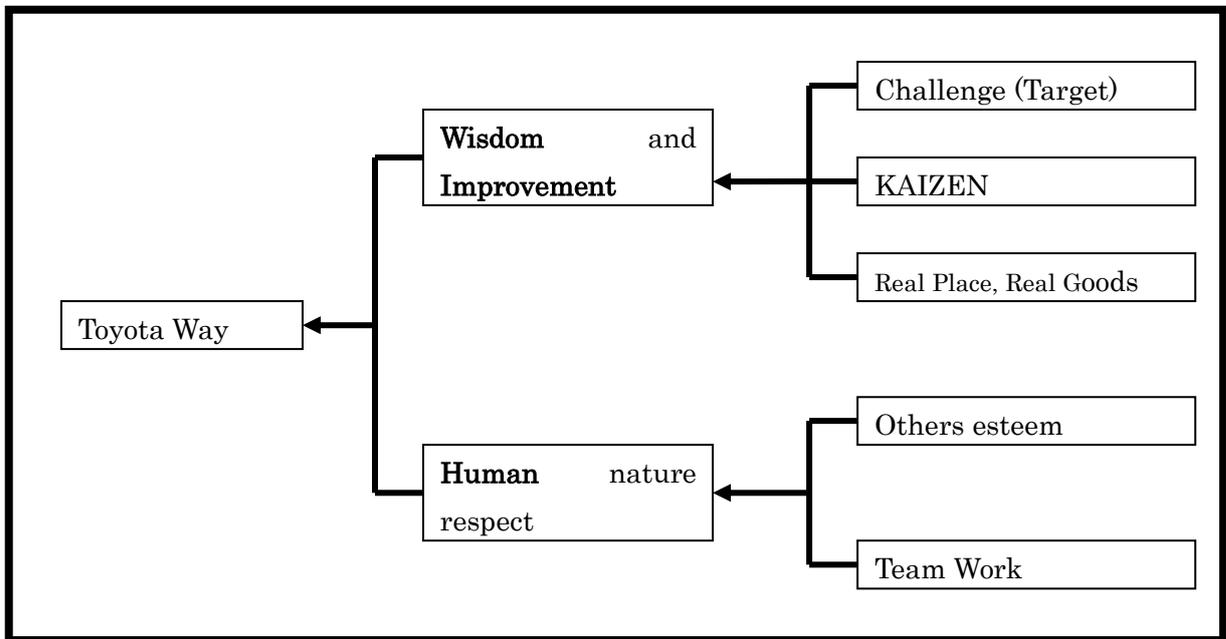
The basis of "Organizational Activities" is that the whole and individual situation seems to mutual.

「 ORGANIZATIONAL MANAGEMENT 」

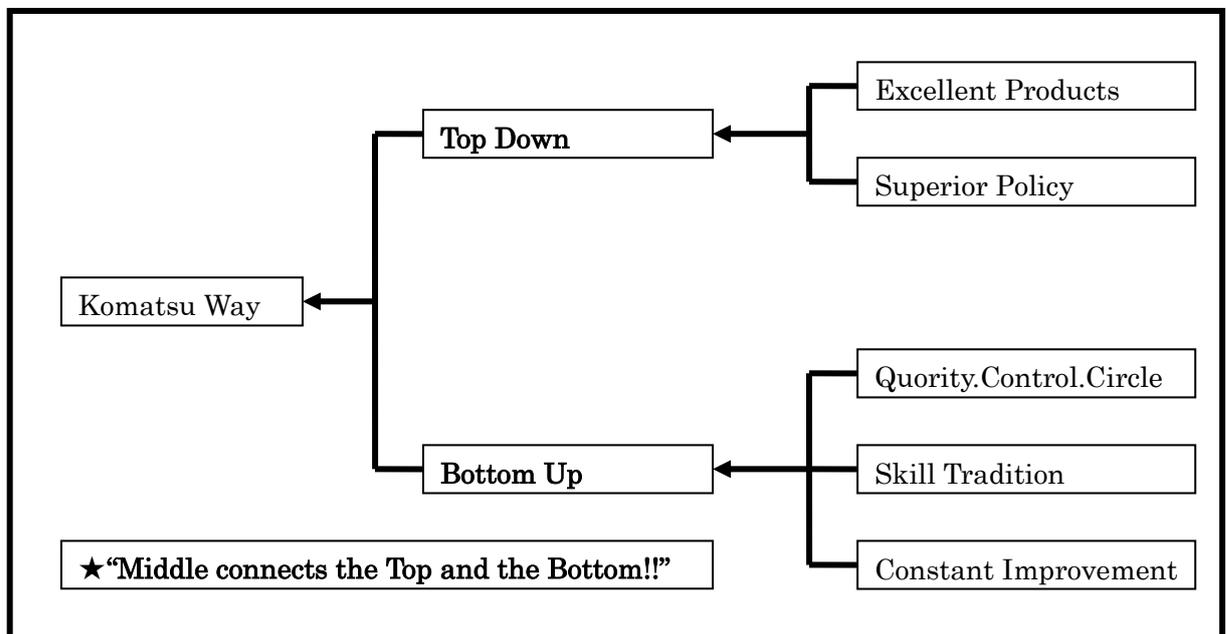


Japanese Corporate Culture (some examples)

1 **Toyota Way** (Toyota Kyushu MFG Co.; President Mr. Sudoh; 7/Nov/2008)



2 **Komatsu Way** (Osaka Plant; Chief of Quality assurance section; 27/Jan/2009)



3 **Yaskawa**; "The Ethics of the Employee" (All the members read it aloud every morning)

- ① Always, For our Customer
- ② Pursue, both High Quality and High Profit
- ③ Continue Study and Win competition by Unyielding spirit
- ④ Spread a View and Change an Idea
- ⑤ Deepen each other's trust and Cooperate

[1] OUTLINE OF QUALITY CONTROL

1. What is quality control?

1.1 Definition of quality control

According to quality control terminology (JIS Z 8101), quality control is a system of means whereby the qualities of products or services are produced economically to meet the requirements of the purchaser. "Quality control" is sometimes called "QC" for short. In addition, since modern quality control adopts statistical methods, it is sometimes called "statistical quality control" and "SQC" for short.

In order to carry out quality control effectively, total participation and cooperation of all people including executives, managers, foremen and workers are required throughout all stages of enterprise activities such as market survey, research and development, planning and designing of products, preparation for production, procurement and subcontracting, manufacture, inspection, sales and after sales servicing as well as finance, personnel affairs and education.

Quality control activities conducted in such way are called "company wide quality control", ("CWQC" for short) or "total quality control" ("T Q C" for short).

As suggested in the definitions above, activities of quality control in Japan are understood to be as follows:

- (1) Consumer-oriented activities achieving qualities required by customers in performance, reliability, safety, economical usage of products, or services, etc.
- (2) Activities to attain the above mentioned qualities rationally and economically by utilizing scientific methods such as statistical techniques. Such activities are to improve and control methods and processes of carrying out the work so as to bring about good results, by using techniques. The techniques used in such activities should not rely merely on arbitrary abstract spiritualism.
- (3) Activities not limited only to manufacturing or inspection departments. Such activities should be undertaken by the participation of all departments in order to effectively solve problems concerning the quantity (production volume, inventory, sales and delivery) and cost (cost, price and profit), or safety, including quality assurance problems, by the mutual cooperation of each department in the industry such as planning, development, manufacturing and sales department, including market research.

- (4) Activities not limited only to certain specialists and experts. Under the leadership of executives, these activities should be promoted by the total participation of all members from top managements down, through managers, to employees at the work site, each member playing his own respective role.

1.2 Characteristics of quality control in Japan

The quality control in Japan was introduced from the U.S.A. after World War II and developed a unique Japanese style which attracted much international attention as Japanese TQC.

In October 1969, a worldwide international conference regarding quality control was held for the first time, and prior to this conference, the 9th quality control symposium on "the characteristics and problems of quality control in Japan" was held in Ohiso in June. There, the following 6 items were studied and introduced by Dr. J. M. Durant at the international conference.

(a) Total participated quality control

Implementation of quality control throughout all phases of activities of the industry by the participation of all people from the top executives down to the workers at the shop floor is unique to our country.

(b) QC circle activity

QC circle activities in the form of activities undertaken by voluntary small groups at the work sites were born in 1962 and have attracted worldwide attention as one of characteristic activities which have enabled Japan to take international leadership in quality.

(c) Audit for quality control

In other countries except Japan, no top management of a company will visit shop floors of factories, branches and business offices for quality control diagnosis. This plays a great role in activating and promoting quality control in businesses. Examination by the experts outside the company is carried out for getting the approval of JIS mark. Furthermore, examination for the Demming Application Prize is considered to be one of the unique systems in Japan, which have improved the level of quality control in Japan and contributed a lot to the promotion of quality control in Japanese industries.

(d) Utilization of statistical methods

At the initial stage when quality control was introduced into Japan, it was called statistical quality control, and since then, statistical methods have been actively utilized in quality control activities. In Japan, all employees widely use simple statistical methods (QC 7tools) in QC circle activities at their working places, while highly sophisticated techniques such as design of experiment and multivariate analysis, etc. are also widely used by utilizing computers.

(e) Education/training for quality control

Quality control is said "to start with education and to end with education". Education is indispensable for quality control activities in the industry. It is only in Japan that education/training for quality control is thoroughly undertaken from president to workers at the shop floor.

(f) Nationwide quality control promotion activities

For nationwide strengthening and promoting of quality control, November of each year is designated as quality month. Various quality control meetings, conferences, and seminars are held. Also many companies hold various events related to quality control during the month. During other months QC circle meetings and Q-S (Standardization and quality control conferences), etc. are widely held and many seminars for education are being provided. Besides, examination and award systems for JIS mark or other national standards system, and Demming Application Prize, etc. have greatly encouraged the promotion of quality control in Japan.

2. Quality control and statistical methods

As given in the definition of quality control by JIS, "... since modern quality control adopts statistical methods, it is sometimes called statistical quality control (SQC), " a characteristic of Japanese quality control is to utilize statistical methods.

Statistical methods are used for quality control activities in many departments of industry such as research and analysis of markets, design and analysis of quality, control and improvement of processes, claim analysis of shipped products and so on. They are used not only for the improvement of quality of products, but also for the improvement of cost and quantity, factors which are closely related to quality, and for the improvement of the constitution of the company, etc., with great success.

Many problems at the production site can be solved by simple statistical methods such as Pareto Diagrams to find out high priority problems; Histograms to help grasp distribution conditions; Scatter diagrams to learn correlations between cause and effect; Broken Line Graphs to learn conditions of change with time; Control Charts to judge if the process is under a controlled state; Cause and Effect Diagrams to summarize general opinions and as a tool to seek causes for abnormalities and Check Sheets to summarize data conveniently, etc. These methods are simple techniques for summarizing data collected at work sites by illustrations and figures and are called QC 7 tools. They are not only used popularly in QC circle activities, but they are also effectively used widely in improvement activities within many industries and recently are also used in small group activities in overseas circles, etc.

In addition to such practical and easy methods, if other techniques such as test and estimation, correlation and regression analysis, experimental design method and sampling inspection method, sensory test and reliability method, etc. are applied according to problems, more effective analysis and improvement of the process will be achieved.

In addition to these QC methods, many techniques which developed in various fields such as IE, VE and OR as helpful means for improving the constitution of industry have been actively used.

The work site is often called a treasure mountain. This means many problems to be improved are buried in the work site like treasure. Let us now take up fraction defectives as an alternative characteristic of the poor shop floor. In a shop floor with high fraction defectives, if the workers recognize poor condition and performance of their shop floor based on data and are willing to make improvements, they can reduce the number of defectives by one-half without much difficulty. Here problem consciousness and awareness of improvements is important. After defective occurrence is reduced to some extent, fundamental tools are required for further eliminating defectives, just as saws, planners and hammers, etc. are required for a carpenter to build a house.

Analysis by QC 7 tools will be of great help in eliminating defectives more thoroughly, in discussing why defectives are generated, in observing at the work site what types of defectives frequently occur and under what condition they occur, in comparing the difference of defective occurrences by stratifying defectives according to raw material manufacturer and equipment.

Most of problems at the shop floor can be solved by such primitive methods. That is why QO circle activities conducted by workers well acquainted with the actual condition of the shop floor are able to produce great results. But more sophisticated experimental design methods and multivariate analysis methods or other special techniques will be required for challenging tasks such as achieving zero fraction defectives. Such techniques require special staff who can devote 100 percent of their time to the task at hand.

As the importance of statistics as a tool for promoting quality control is over-emphasized, some may be apt to consider using statistics alone as quality control. In the past, the objectives of quality assurance and its improvement was overlooked because of too heavy a dependency upon statistics. From these misunderstandings, quality control was often left in the hands of people who are only interested in statistics. On the other hand, it requires some re-thinking to carry out quality control throughout the entire company without studying analytic method.

Needless to say, the use of statistical methods is not the objective. But in spite of having good problem solving tools, if one does not know how to use them or does not use them, it will be a big loss not only for the company but also for the person trying to implement QC.

3. Improvement and control

3.1 What is improvement?

Japanese industries have recently made remarkable developments, drawing much attention from all over the world.

Since Japan, as a country with poor natural resources, has no alternative other than advancing in the world market in order to survive, Japanese industries have made all out efforts to improve quality and reduce cost, day and night, for a long period of time. These accumulated achievements are the basis of the present prosperity of Japanese industries.

Especially in industry, people working at factory sites have been engaged in improvement activities to further better the present condition by setting up higher level targets.

The fundamental duty of people working at the site is to carry out the set standard operation correctly and to maintain the process under stable condition. Nonetheless, workers, not content with the "status quo," continued to make efforts to improve constantly. This also has contributed a lot to the prosperity of Japanese industries.

While "control" is to maintain the present technical and management level, "improvement" is to bring them up to higher level. In other words, improvement is to "break up the present situation." It can also be called "creative development efforts to produce new things.

3.2 Control to maintain the results of improvements

In the process of controlling the status quo, emergency measures for abnormal situations must be taken, but the causes must also be sought and countermeasures to prevent recurrence taken. As experience in taking countermeasures increases, dispersion will occur less and stability will be improved.

As shown in Fig 3.1, "kaizen"(improvement) is to solve problems one by one by setting a higher level target, based on the present situation, and raising a level by breaking up the status quo. If you are satisfied with the present condition because it is stable, you will not be able to find problems for improvements nor expect advances from the present state.

Even if we make improvements and achieve higher levels, if we fail to apply "Hadome" (countermeasures to prevent backsliding) for maintaining and controlling the achievement of improvements, sometimes they may end up in going back to the original condition. The aim of "control" is not only to maintain the present state but also to reconsider the method of control from the viewpoint of "against which item backslide prevention measures (Hadome) should be taken" in order to maintain the achievement of improvements for a long period of time. It is also very important in order to build up a secure foundation for future improvement activities.

Control and improvement must be steadily carried out in the sequence of control - improvement - control - improvement. They are important steps for the advancement of technique as discussed above.

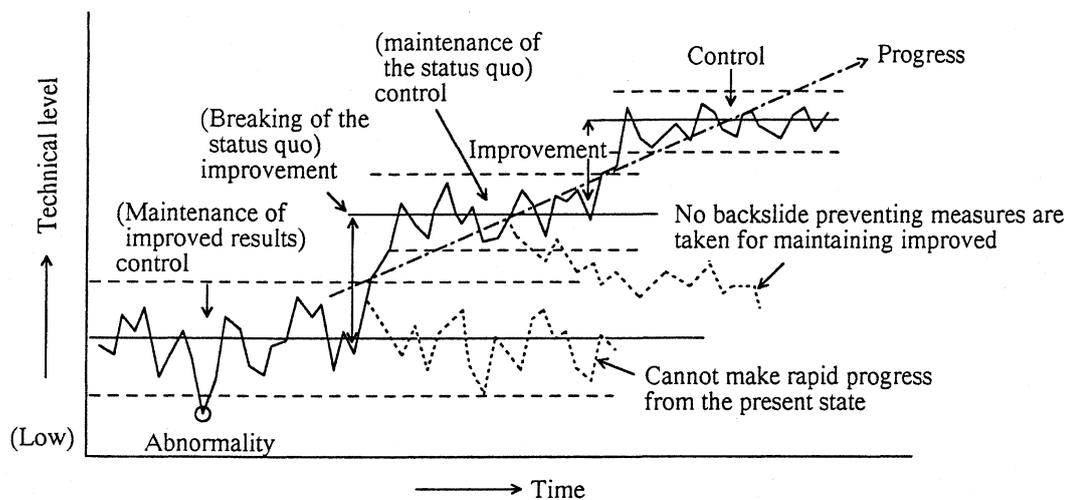


Fig. 3.1 Control and Improvement

3.3 Basic attitude to cope with improvement

(1) Active problem consciousness

If we are content with the present state because "we don't have any particular problems, since things are under control", we will be behind the times. The tempo of modern technology innovation is very fast and economic conditions and the social environment are changing rapidly.

Further, we must have active problem-consciousness to improve and innovate conditions by quickly responding to changes, based on our feeling of responsibility to fulfill the mission of our industry, e.g., quality-consciousness to think about how to produce better products and satisfy customers, cost-consciousness to look for hidden-wastes to reduce cost, etc.

(2) Finding problems voluntarily

There are many problems in various phases when looking at the present condition. When deciding which problems should be given higher priority, the following are important.

- ① Consider the degree of importance of the problems to be improved at our own department according to directions and plan given by superiors in compliance with company policy.
- ② Based on the nature of the work, we may have some problems which we want to ask other department to improve. But first of all, take up the problems voluntarily at our own work site which can be improved and solved by ourselves.

When we tackle problems voluntarily rather than when we are forced to do so by others, our will to make improvements will flourish.

(3) Tenacious cooperative system

There are few problems which can be solved by individuals' sporadic ideas. Since most work is interrelated with other departments and carried out by mutual collaboration, cooperation of coworkers becomes indispensable. It is important for each worker to give his own ideas and carry out ardent and tenacious improvement activities for common targets. For this purpose, managers and group leaders are required to display strong leadership and guide members, playing a role of coordination and promotion.

3.4 How to carry out improvement activities

Seven steps to carry out improvement activities are shown in Fig 3.2.

- 1st step : Grasp problems
- 2nd step : Set up improvement target
- 3rd step : Analyze factors
- 4th step : Study improvement measures
- 5th step : Carry out improvement programs
- 6th step : Evaluate improvement results

In the event improvement results are found unsatisfactory, review must be started from the 4th or sometimes 3rd step. As soon as the desired results are confirmed, the seventh step is taken,

- 7th step : Take countermeasures against preventing backsliding and establish new control method.

The above seven steps should be used as a cycle. In order to improve from the current improved and controlled condition to a higher level. The next improvement activities are carried out once again from the 1st step "grasp the problems."

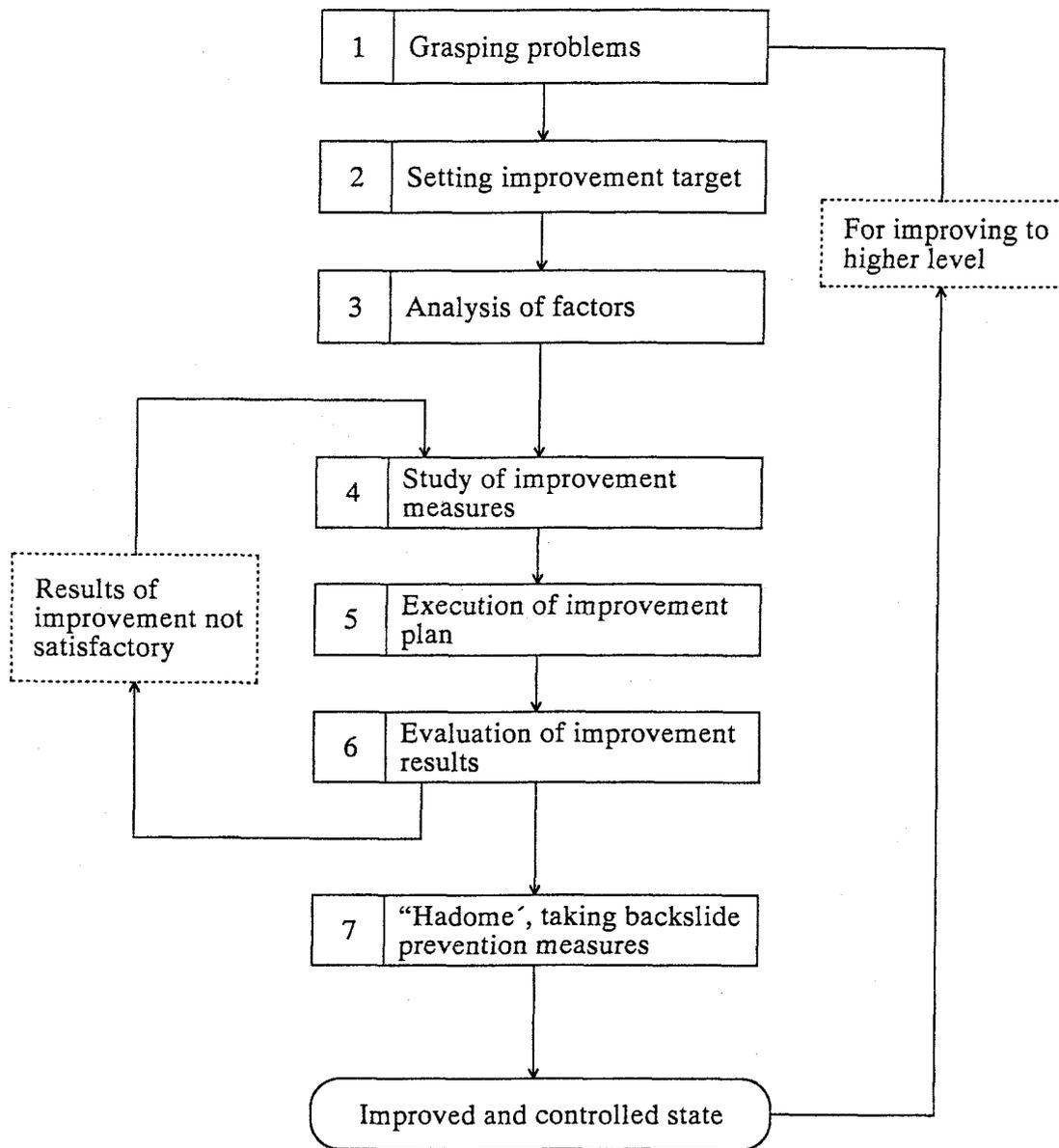


Fig.3.2 Procedure of Improvement

3.5 Report on improvement activities - QC story

When the target of a theme taken up is achieved by improvement activities, the process of the activities and effects achieved should be summarized in a report. When making a report to managers or others or giving presentations at a meeting, the summarized report clarifies your explanation, gives the process a logical order and makes it easy to understand. This is generally summarized as a "QC story." The basic construction is given below. This is related to the steps for carrying out improvement activities explained before and is given in accordance with those procedures and steps.

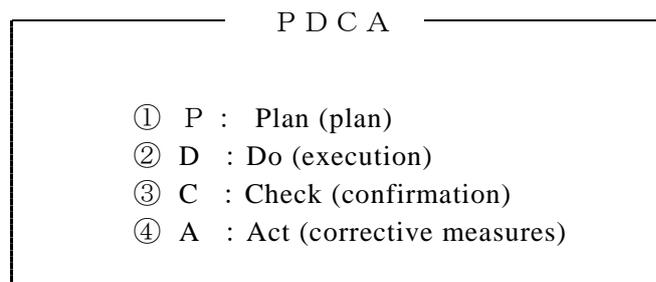
Basic Construction of OC Story

1. Theme
2. Outline of the process
3. Reason for selecting theme
4. Grasping the present situation
5. Setting a target
6. Analysis of factors
7. Improvement measures
8. Effects
9. "Hadome" (taking backslide preventing measures)
10. Remaining problems and future plan

The new improved and controlled technical and management level is considered to be the "status quo~" To improve from this "status quo" to higher level, the next improvement activities will start from the first step "grasping the present situation". By repeating this cycle for improvement activities many times over and over, we can steadily strengthen our improvement abilities.

4. Control cycle - PDCA

In general, "control" in a broad sense means systematic activities to carry out plans and management to achieve a certain objective rationally and effectively. When we carry out anything, we must first clarify the objective, then set up a plan to achieve the objective, execute the plan, check and evaluate the results and take corrective measures when they differ from the plan. In other words, control is a set of activities which carry out the following four steps and achieve the objective.



As shown in Fig. 4.1, a circle representing these four steps is called a "control cycle", (sometimes "control circle") or PDCA for short. To turn this cycle is also called "to turn PDCA".

Fig. 4.2 shows more concrete steps based on this cycle (PDCA).

(1) Plan: P

1) Decide on object

Clarify the target as to "what" is the object of control and "how" to carry out what. Based on the general policy, the object is clarified and a target is described in concrete numerical figures.

2) Decide method to achieve objective

The method as to "how" to achieve the objective should be decided. Relations between cause and effect should be clarified and the methodical standards of how to obtain the targeted result and of how to control the factors in question should be decided.

Fig. 4.1 Control Cycle

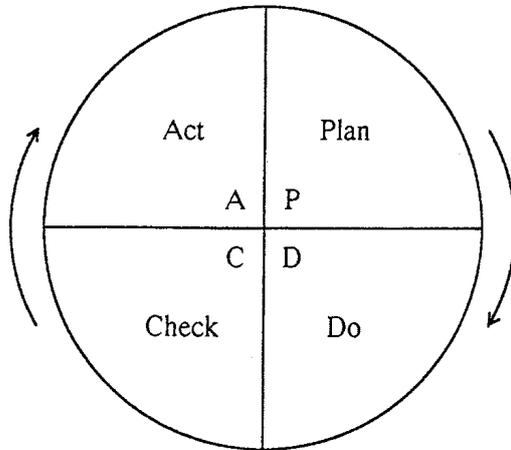
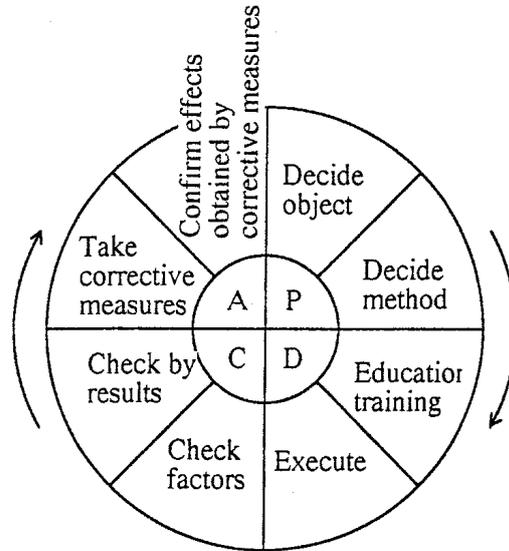


Fig. 4.2 Steps of Control Based on PDCA



(2) Do: D

3) Educate & train

After the objective of control is fully explained and understood, methodical standards to achieve the object are taught and practical techniques is given by training. Discipline to observe rules and develop technical skill are important, but teaching motivation and making objectives thoroughly understood are more important.

4) Implement

Work is done according to the standards established.

(3) Check: C

5) Check factors

In the process of execution, "control items of factors are measured and checked and compared with standard values to check whether there are abnormalities.

6) Check by results

Control level can be shown by results. Quality characteristics are inspected or measured and evaluated by comparing results with targeted values. The idea is not only to check results but to control the process by the results.

(4) Action: A

7) Take corrective measures

When abnormality is detected by a check or a great difference from the target value is found, not only cause is identified, irregularity eliminated and normal condition returned, but also action is taken to prevent recurrence by eliminating the fundamental causes. Sometimes reeducation may be necessary, sometimes methodical standards must be revised.

8) Confirm effect of corrective measures

Whether desired effects are obtained or not is determined by checking after taking action. Items which should be improved in each step are reflected in subsequent planning and used to turn PDCA toward a higher level control.

By repeatedly turning PDCA steadily, control standards may be gradually enhanced as if following a spiral staircase. These four steps of PDCA may be applied and utilized in every type of work. Generally, P and D or planning and Doing are carried out comparatively well but the following steps C and A, i.e., Checking and Acting, or taking corrective measures, are often neglected.

"Targets have been set up and the method to achieve targets also decided. They are expected to be carried out according to what has been decided. If the result is found no good, this must be because the executing department did not observe standard methods." If we think like this, it is recommended to start from C, the check step. In other words, by turning CAPD cycle, the results of check should be accepted frankly, the cause pursued objectively, and the best remedy considered.

The control cycle is a fundamental procedure for reflecting on and reviewing activities.

5. QC Circle and QC Circle activities

What is a QC Circle? Let us check the definition given in "QC Circle principles" compiled by the QC circle headquarters.

The QC circle is

a small group
to perform voluntarily
quality control activities
within the same workshop

This small group carries on

continuously
as a part of company-wide quality control activities
self-development and mutual development
control and improvement within the worksite
utilizing quality control techniques
with all members participating

Further, it says the basic idea behind QC Circle Activities carried out as a part of company-wide quality control activities is as follows:

1. Contribute to the improvement of the constitution and development of the enterprise.
2. Respect humanity and build a worthwhile-to-live and happy, bright workshop.
3. Display human capabilities fully and eventually draw out infinite possibilities.

The following are a few comments on the above.

(1) Voluntary group activities within the same shop floor

Although QC circle activities are those which are carried out by a group of people within the same worksite, these are not based on orders or instructions from the enterprise organization but based on the concept of respect of independency of individual in operating group activities.

Respecting independency of individuals means respecting the humanity of individual workers, which leads to the display of each member's ability to fullest extent, which in turn may be connected to the achievement of improvement activities. These activities are not carried out by people within the same worksite but are group activities by people in the same working place. Mutual development

can be attained by mutual respect, further encouraging and developing fair and equal deliveries of opinions by each person and activities as a group.

(2) QC circle activities as part of company-wide quality control activities

Enterprises expect a lot from TQC activities in strengthening enterprise constitution, implementing quality assurance thoroughly, etc. In this respect, small group activities such as QC circles play a big role from the viewpoint of promoting activities with the participation of all people, fostering voluntary activities for problem solving and improvement, enhancing abilities of workers through self and mutual development etc.

Promoting QC circle activities is apt to be misunderstood as the promotion of TQC activities because it is said to involve the participation of all members.

In TQC activities, as already discussed, activities such as improvement of quality assurance systems, development of new products, etc., are essential within the mechanism of policy control in connection with problems of enterprises through the enterprise organization from executives and top management to managers, supervisors and staff. Even enterprises which plan to begin with the introduction of QC circles must not forget the possibility of future development toward TQC activities as a whole enterprise, taking into consideration the degrees of growth of QC circle activities.

(3) Self-and mutual development

The function of developing one's own potential by positively acting on self-motivation, not on instructions or orders from superiors, is self-development. By this, individual abilities are improved and leadership is fostered. QC circles become activated by the total participation of members.

In addition to enhancing the self-motivation of individual members, it is important to make efforts to strengthen mutual development in various aspects, such as among the members within circle, and among circles within a company, or by deepening relations with many other QC circles in other companies so that QC circle members are not restricted in a small world of their own. By this, they can not only improve their level but also improve their analytical and control ability.

(4) Utilization of QC techniques

QC circles, with the cooperation of all members, aim at bringing about good results by grasping problems in the worksite, analyzing them, taking counter-measures and improving methods for carrying out work, and, at the same time, preventing the recurrence of the same problems and stabilizing the control of processes.

In order to achieve this, members should make efforts to obtain broad knowledge of control and improvement techniques including QC 7 tools and utilize them in practical way, in addition to enhancing their self-motivation for improvement.

(5) Deployment of activities closely connected with the worksite with regard to control and improvement

In QC circle activities, members should observe their worksite with the view of quality consciousness, problem-consciousness and improvement-oriented thinking, so they can recognize many potential problems and, at the same time, the existence of keys for solving those problems. Few problems can be solved by taking a single countermeasure. Tenacious efforts and creative ideas are required. If members do not create ideas for solutions through mutual cooperation based on problem-consciousness, they can not advance improvement of their worksite nor maintain the worksite under a controlled state.

Although QC circle activities are voluntary, they cannot be operated without regard to the shop floor and organization since they are activities within an enterprise. But managers tend to leave QC circle activities unattended because of their voluntary nature.

It is taken for granted that the managers in the organization should make efforts to help and guide QC circles by creating a shop floor atmosphere that enhances their activities, so that improvements can be carried out while maintaining focus on problems at the worksite and enhancing each individual's abilities.

(6) Vitalization & perpetuation of QC circle activities through participation of all members

When QC circle activities are first introduced, they are liable to become the single play of a leader. What is important with QC circle activities is participation of all members. When a QC circle has just been formed in a certain worksite, it is

important that all people there be the members of the circle, attending the circle meetings, thinking over and discussing the problems together, and each member sharing a role and taking part in the activities. Each member must play his or her part while also playing a leading role.

Results obtained by total participation will generate enjoyment, confidence and unity among members, encouraging them to take challenges to another problem solution and promote further activation of circle activities.

TQC is not a temporary special event. Its activities should be carried out on a permanent basis. OG circle activities are a part of TQC activities, so QC circles and managers of the enterprise should cooperate in order to activate and foster QC circles on a permanent basis as well.

8 Principles of Quality Management

1	Customer focused Organization	Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.
2	Leadership	Leaders establish unity of purpose and direction. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's benefit.
3	Involvement of People	People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
4	Process Approach	A desired result is achieved more efficiently when activities and related resources are managed as process.
5	System approach to Management	Identifying, understanding and managing a system of interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.
6	Continual Improvement	Continual improvement of the organization's overall performance should be a permanent objectives of the organization.
7	Factual approach to decision making	Effective decisions are based on the analysis of data and information.
8	Mutually beneficial supplier relationship	An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

Simple/Elementary QC

QC is not always big structure. QC begins from the simple thing which anyone can do it. You can do it in the SME and must rather do it. Once defect occurred, it must be analyzed the Causes and carry out Measures. Prevent from occurring the same defect twice again after that time. Your company can get Strength more than a big company if SME piles up such an action steadily. Arranging of "4M.".The followings are example.

Item	Explanation	Remarks
1.The display of the defect product.	Display the goods of the product which became unacceptable. Make mark in the defective point and attach the documents explained Why is it Defect.	At the passage side or lunch room.
2.The sample display of the lower defective Limit.	It is difficult for the human beings to understand it even if explained by Number or Words. Put the rejected item beside the accepted product. Display the accepted product and the product cleared the border of lower defective limit. It is easily understood by comparing the products which are Good/Not Good together.	
3.The severe testing of the raw material at the first acceptance.	80% of the defective products are caused by poor material itself. Perform an acceptance examination to the raw material strictly at the procurement. Assign the eligible person in charge of the acceptance examination and install necessary testing equipment. Perform the storage in the warehouse correctly. Apply for FIFO concept. Don't pile up the material. Keep a warehouse clean any time.	
4.Limit gauge.	Prepare a gauge to be able to easily perform the confirmation of dimensions after the work. Two types of gauges which indicates the limit of the pass and the unacceptable limit both.	Maintenance is important.
5.Jig	Arrangement and the maintenance of Jig are important. It leads to stability and securing of quality as well as simplifying the work easy.	Same as above.
6.Prior preparations	Prepare necessary amount of the material and tools before starting the work. The worker does not need to look for the material and the tools during the work. In case the material being lack / surplus at the end of the work shows "a work error." in the process. The "Advance Preparation" improves both the productivity and the quality by all means.	Preparation for next day is the main job of foreman.
7.Put the defect product in the designated place.	Recommended place is facing to the passage side since all the members can see. Distinguish the rejected and accepted product clearly. Those purposes are to take necessary measures to the defect product firmly. As for the	A kind of "5S" activities.

	serious defect, a manager and a worker analyze a cause and think about measures. All the members have to do KAIZEN earnestly.	
8. Even if simple, the person in charge record defectiveness every day.	Based on simple record, Carry out the "Revision of work manual" "Make maintenance check list of the machine" and "Educate/Training of the worker".	Using format or check-list.
Item	Explanation	Remarks
9. Keep clean a machine and a workshop.	"5S" is the basic of quality and productivity. The workshop which is clean/safe is the basic of quality/productivity.	For the activities "Kaizen" by Facts.
10. Display, Before KAIZEN and After with real goods.	All the members know the real figure of the KAIZEN activity. All the members think about next application from the example and start action by themselves.	For understanding Kaizen easily.
11. Much another wisdom and invention. *For examples.	1) Prevent dust with the cover of the transparent seat. 2) Distinguish a box of work completion and non-completion. 3) Attach a drawing to a work product. 4) Put the photographs of parts on the part's shelf. 5) Prevent a wound, put a spacer between parts. 6) Light up illumination. 7) POKAYOKE. 8) Show the work manual by PC display. 9) Display parts and the products in the same direction. 10) Limit the pile-up/accumulation.	
12. Post a process schedule.	All the members can understand what they should do and when. If all the members understand it, they think by themselves and can act. Confusion would not happen.	"Visible & Open"
13. Post the graph of the defectiveness rate.	All the members know the tendency of the defectiveness rate. Consequently motivation will be increased and they take the KAIZEN actions positively.	Same as above.
14. The managers of each Process gather and confirm progress.	They can carry out to prepare in advance and adjustment effectively if they understand the progress of the former process. The confusion is a cause of the defect outbreak.	
15. Post the skill evaluation table of the workers	All the members understand one's position. All the members perform to improve their skill by themselves.	"Visible & Open"

What is KAIZEN (Improvement) ?

“For What”

1 Customer oriented

-Gaining the customer's reliance-

2 Quality; First of All

-Customer's satisfaction -

3 Follower Process is my Customer

- Bad influence is not extended to outside-

“How to”

4 Variety Reduction

5 Process Improvements

6 Management on Facts/Data

7 P.D.C.A

-Management Cycle; Feedback Cycle-

8 Preponderant

-Pareto Diagram/Analysis-

9 Recurrence Prevention

10 Standardization

Elimination of 7 MUDA

<u>Object</u>	<u>Type of MUDA</u>	<u>Countermeasure</u>
<u>Material</u>	Making too much	1) Consciousness is changed. 2) Timing is united (=line balance; Sell & Production). 3) Inferior goods and failures are made into Zero. 4) Number of production is according to selling or shipping number.
	Transportation	1) Process connection 2) Flow production 3) Type-of-packing change. 4) Improvement in carry efficiency.5)Using shooter 6)Using gravity
	Stock	1)"5S"&visible. 2) Timing of production is adjusted. 3)ABC stock management 4) Inferior goods and failures are made into Zero. 5) Set up improvement & changing to small lot. 6) Lot production to flow production 7) Elimination of transportation. 8) Shortening the lead time. 9) Cell production. 10) Pull production.
	Defect	1) An improvement of an origin process. 2) Improvement of Machine (POKAYOKE; Automatic with Human). 3) Human (Standardization of work; Training; Skill up).
<u>Motion</u>	Waiting	1) Layout change. 2) Improvement of working process. 3) Visualization of a motion. 4) Mechanization. 5) Multi skill. 6) Operating multi machines.
	Processing	1) Processing method. 2)Processing conditions
	Motion	1) Motion economy 4 principle (Decreasing of the number of motion. Simultaneous. Shortening motion. Easily action.) 2) Standardization. 3) The change of design of a product/process/parts.

『Step to Improvement』

- How in Japan to advance it (example)

- ① Nakashima Turret Ltd. (Metallic cutting industry; about 110 employees)
5S, Rule Observance ⇒ Quality, Productivity ⇒ ISO9001, Delivery date ⇒ C-TPM
- ② Sao Electric Industry Ltd. (Electric part manufacturing; Manage jointly in China; about 120 employees)
3S ⇒ Rule Observance (2S) ⇒ KAIZEN (team play)
- ③ Productivity Movement History of Japan
Standardization ⇒ Quality ⇒ Delivery date ⇒ Customer Satisfaction ⇒ whole Company Wide Movement
⇒Combination with Customer and the Cooperative Enterprises.

- Conclusion

	1 st Stage	2 nd Stage	Present
Method	Standardization of work method	Production plan and observance of delivery date. Possession of multi machine	ISO;JIT;CELL production
Man	Observance of shop standards	Premeditated skill training	Multi-skilled worker
Machine	3 S	Preventive Maintenance	Automatic operating machine
Material	3 S	Observance of procurement delivery date. Inventory control.	Stock 0 (KANBAN)
Quality	Inspections by allowance standard and defective goods are prevented being shipped.	Discovery and improvement of rejected goods generation process	All product inspection by making of inspection automatic process
Environment (Work site; Business)	3 S ⇒ 5 S	Safety First. Proposal system ⇒ QCC.	Entirely use of Information Technology (ex. SCM ; ERP)

"Do, first of all."

- ① Post paper that writes **the fact**, and inform all members of the current state (There is no movement way that the person doesn't **understand the realities**).
- ② Do the proposal system (There is no chance **to make remarks= speak out**, and collecting all power do not have it is sure to do).
- ③ Standardize it (It is a first step of the quality improvement and the productivity enhancement **to decrease the Difference/Variety**).

Process of introducing “5S”

Introduction was failed at first, and then:

(1) Working on familiar problems

- A consultant was invited, and all the members had a lecture on “the method of solving problems.”
- After the lecture, overnight from Saturdays, members held discussions on the points to improve in familiar problems.

80 members were grouped into 12 teams and, in each team, the members listed problems.

- Problems written on labels were classified as follows.

Category \ Whose	Own	Superior's	Company's
5 S			
Work rules			

- The members took actions on what they could do, starting from 

(2) The activities went on step by step.

Step \ Contents	Theme	Solution cycle	Work-on time
1 st step	5S: Work rules	6 months	For 2 years
2 nd step	Productivity, quality	4 months	3rd to 5th year
3 rd step	Policy management (ISO 9001), Delivery period	3 months	From 6 th year



(Code Address)

To the Section in charge of

Judging Committee	Sec. manager	Chief	Foreman
(Signature & Date)			

My Device

Present date YY MM DD

No	Device Name		
Sec. Name	ID No.	Age	
Group Name	Name	The year length of service	

(Notes ; Sec. manager; Chief; Foreman; Designer; Testing & Inspection man can' t join to this system.)

Applied Product; Work and monthly number	Date of applied	Foreman comment
--	-----------------	-----------------

Former method

New method

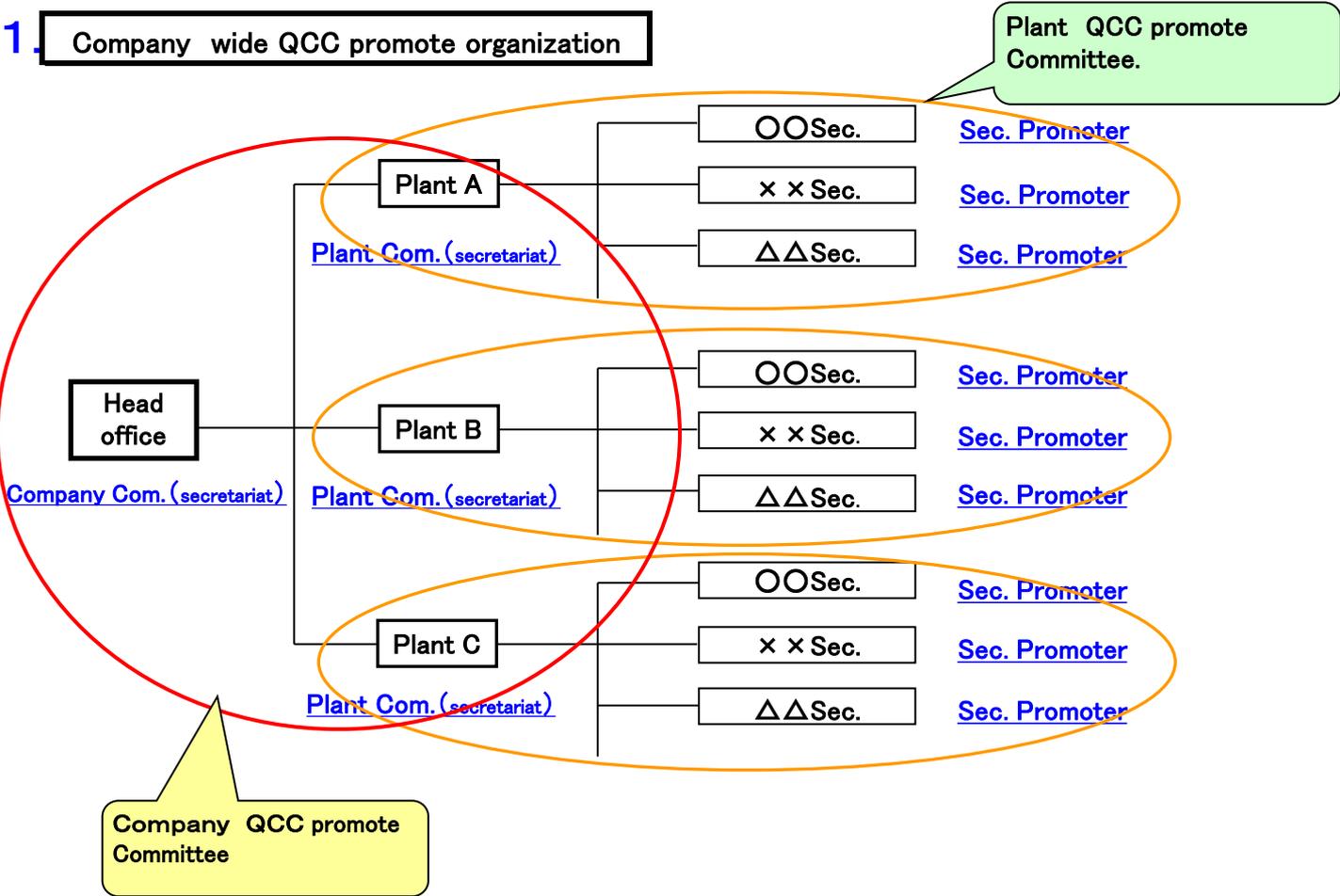
	Former Method	- New Method	- Newly needed	= Device Effect	Judge	Idea	Effort	Merit	Total	Grade
Man hour	H/M	H/M	H/M	H/M	Total ¥2000/H	Primary				
Material	¥/M	¥/M	¥/M	¥/M		High Rank				
Others	¥/M	¥/M	¥/M	¥/M		Continuity	• At First time only • _____ Months • One Year and More			
Changing Items ; Yes or No	Standard Time	QC Process Chart	Work Manual	Bill Of Material	Take Note					
Date of Change										

explain **Judge** ; Device evaluates by the view of points [**Idea, Effort, Merit**].

And according to Sum of Points, grading the Device and awarded bonus.

How to succeed QCC (small group activities)

1. Company wide QCC promote organization



2. Training of QC Method

Step of Education	Member to education	Method & Instructor	Period
Promote Committee Member	<ul style="list-style-type: none"> Company Com. (secretariat) Plant Com. (secretariat) 	【Outer seminar】 <ul style="list-style-type: none"> Outer Professional Instructor 	Half Year ~ 1Year
Manager Chief	<ul style="list-style-type: none"> Sec. Manager Chief Clerk Foreman Engineer 	【Inner Education】 <ul style="list-style-type: none"> Company Com. (secretariat) Plant Com. (secretariat) 	1Year ~ 2Years
Employee Part Timer	<ul style="list-style-type: none"> Employee Temporary Employee Part time Worker 	【Inner Education + OJT】 <ul style="list-style-type: none"> Sec. Promoter Sec. Manager ; Chief Clerk 	Half Year ~ 1Year

Most Important Matters are
 ① Make Organization and maintain
 ② Understanding QC Methods well

3. **Setting Bonus**

(1) Holiday; Over time Activities

Pay cash bonus to all of member participants, one third of average wage of employee. And this bonus are equal to all member, even if their hour rate wage are different each other.

(2) Theme Solving ; an Assessed Amount to Team . ⇒ They use Bonus for a recreation feast.

Promote committee evaluate effect, effort, idea, cooperation . . . of solving theme and grade a rank 1~4. ex. 4th(\$30) 3rd(\$50) 2nd(\$100) 1st(\$200)

(3) Participate in Outer QCC Activities Competition Convention. ⇒ Plant manager invites team members to Dinner held at high class restaurant.

4. **Setting Meeting Location (Manager arranges this matter by oneself.)**

Before Activities start, prepare the location for QCC member meeting together (Meeting room or booth)



Example

- 1 or 2 meeting room for Section.
- 1 booth for Foreman.

(Table; Chairs; Blackboard, 10~15 members can hold Meeting at that site.)

5. **Arrangement QCC with properly numbers of members.**

Properly number is 5~10.

• Few members (under 5 men) . . . if one member absent, meeting will cancel easily. And data arrangement; making document; . . . are needed, one man tasks are heavy.

• Much members (over more 10 men) . . . Too much time needed until all members agree conclusion. And member's participant will be decline, because of one man tasks too slight.

6. **Setting the Time for QCC Meeting or Activities witch can all member participate.**

Ex 1. Over time at Thursday.

Reason; Wednesday is No Over time day (at many companies in Japan) and Friday is weekend.

Ex 2. Once a week (many cases at Friday) Lunch time 30 minutes + beginning afternoon work time 30.

Reason; For Temporary employee; Part time worker can participate QCC Meeting.

7. **Manager's Assistance and Effort to increase Motivation.**

(1) Round Attendance to QCC Meeting ⇒ to indicate manager's concern is important.

(2) Positive participate into QCC Convention (Entrant or Auditor).

(3) To attend QCC Convention Another Comp. participate.
(Entrant or Auditor)

(4) To read QCC Activities Magazines.

Skill of how to use QC method ,
Construction of QC Story will be
grade up rapidly !!

8. How to manage QCC Activities well.

(1) Setting adequate solving period for 1 theme and number of annual activities.

- ① Adequate Period. ⇒ 3 months ~ 6 months
 - short time (less 3 months); Meeting, Document arrangement are so busy and become short of breath.
 - too long (Ex. 1 year); Meeting will be held uncertain. (about half of period will be no activities.)
- ② Adequate number of activities. ⇒ 3 ~ 4 activities in annual.

↓

Most much activities in Japanese QCC Activities.
15 / Year.
↓
NISSAN SYATAI Comp. "My self" Circle.

(2) Adequate Choice for Theme.

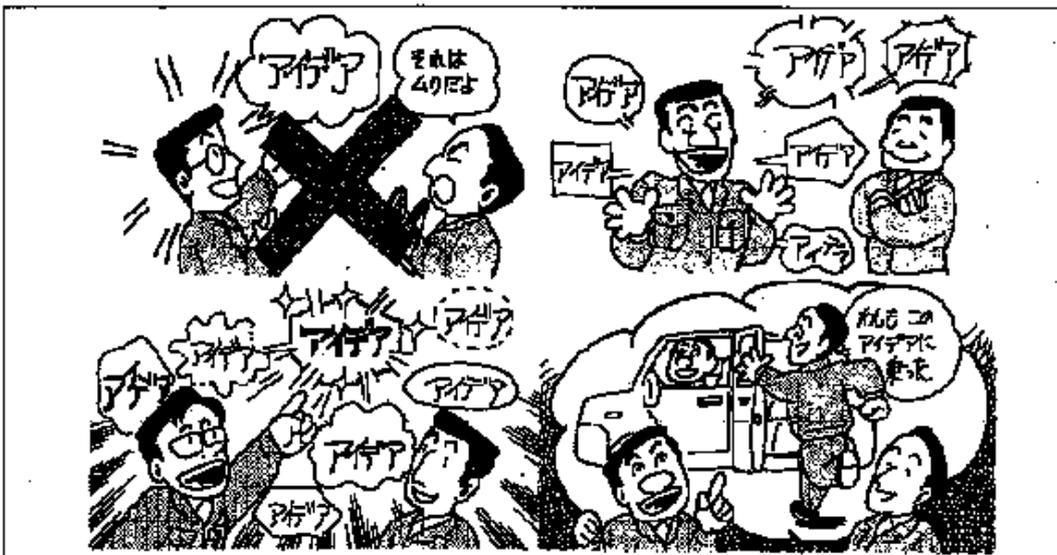
- In relation to a plan which is higher in rank ... about half of themes annual.
- Reason; Manager understand/admit Activities easily and may be grading high rank.

Theme is setting by QCC freely.
↓
But too "Freely" turn into the choice solving easily theme
and QCC Activities turn into out of Expectations.

(3) Discussion on the 4 rules of Brain Storming.

- <1> No Judging about others Ideas.
- <2> Welcome free and unrestrained Ideas.
- <3> Many Ideas !
- <4> Take advantage of the others Ideas.

図1 ブレインストーミング



(4) Task Rotation System ... All members play leading Part.

- Leader of Theme is changing in Rotation.
- Reporter, Assistant at QCC Convention are in Rotation also
- Theme Conclusion Report is made by team member in Rotation.

By-product of QCC Activities.

↓

Everyone can speak in public.
(It's so miserable to couldn't speak
Thanks for participants when his
son's wedding party will be hold
someday.) Everyone has chance
to meet and discuss with Top

Points of QCC Activities

Definition of QCC

- (1) **Group activities** by Workers stand in the forefront of workplace.
- (2) QCC Activities are not different from their Jobs.
QCC **Activities will be combined with Jobs** more closer day by day.
- (3) Hold QCC Meeting periodically to solve new Theme one by one.
It's the **continuous and don't stop** movement.
- (4) Activities, contribute to **advance Quality of Product; Service; and Job.**
- (5) Not satisfy with Present condition, think and perform KAIZEN all the time.
The **Mind of " Denial of Present "** is most important.

Aim of QCC

- (6) QCC is **for one's-self not for another one.**
By QCC, one's ability will increase and one's desire/dreams will be realized.
- (7) To increase Communication each other, **to make workplace much better**
which is filled with Trust; Delight; Vivid Mind; Hope; and great Satisfaction.
- (8) To develop **Customer Satisfaction** and
to contribute **Human Society welfare.**

Roll of Manager/Administrator

- (9) **Recognize that** for finding out superior person and bring up.
Realizing good job shop **through QCC Activities** then excellent men will knock
at the door of the Company someday.
So they have to assist QCC Activities for themselves also.
- (10) Needed for unrestricted **guidance, direction support, encouragement.**
Especially Mental Support " I stand here ! on your side ! "

If you were requested comment for theme conclusion report, praise 3 points
and then advice 2 points. **Not Critic but Encourager !**

3 patterns Problem Solving Approach and How to choose

Effective progress problem solving is based on adequate solving approach. So to study the Pattern well is very important. Pattern means 『Organized Step of problem solving』. Anybody take this Pattern, they can get high level Solution. In another word, 『Organized Step of problem solving』 supply effective solving steps to any group or person and they can solve difficult problem more easily, effective, fast, not waste of time. So called 『The Rudiments』.

『Organized Step of problem solving』 has 3 patterns from the nature of the matter
① Problem solve **② Subject accomplish** **③ Plan practice**
 Which pattern shall be chosen ? Next decision table will help choice.

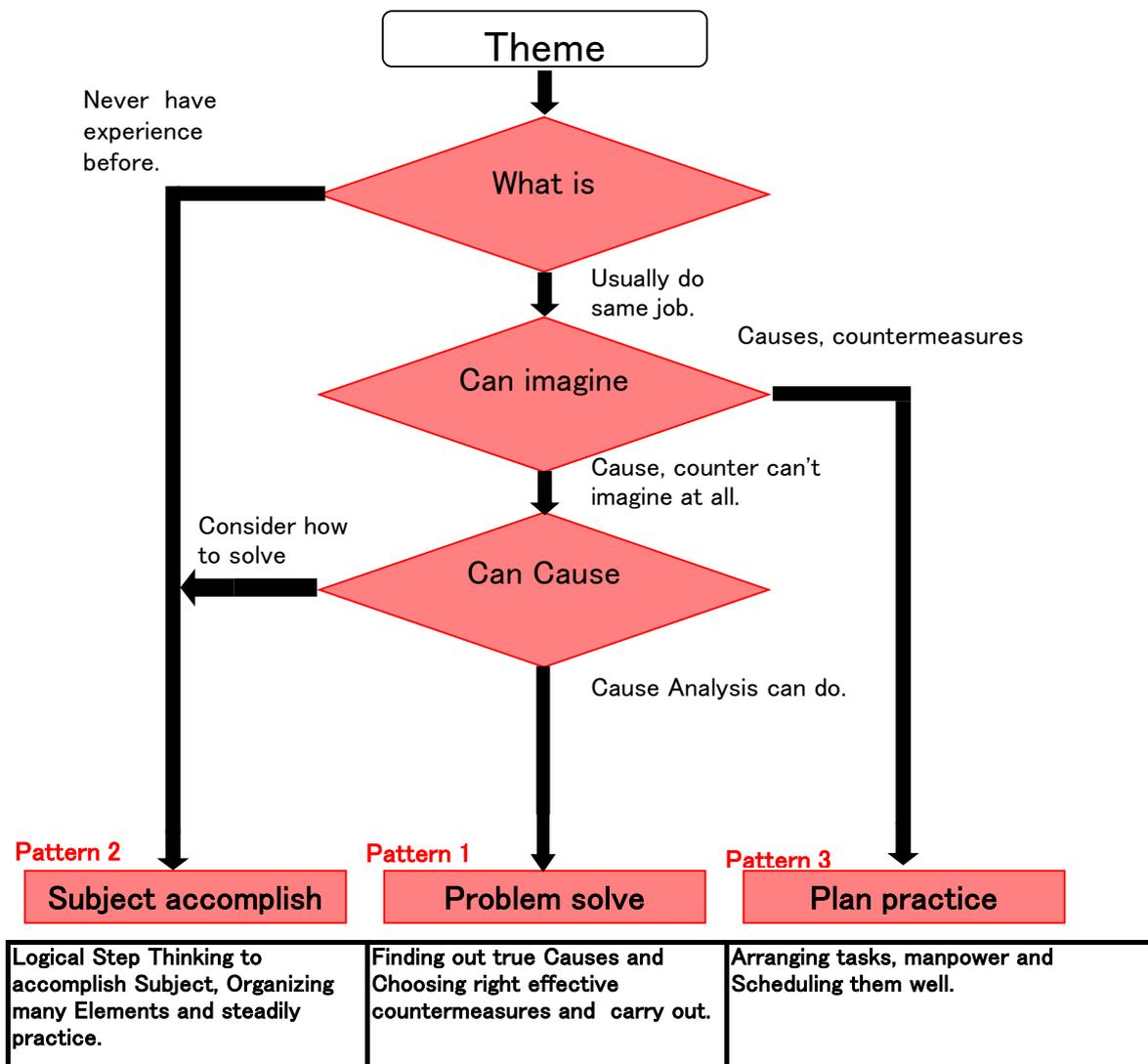


Table 1

Progress of QC Circle Activities

FY	From 1980	1981	1982	1983	1984	Results	
Priority items of promotion division	Coming out of company's constitutional problems	Setting of priority items for common management	Direction and development into policy of 22 priority items	Speed-up of improvement by front-line improvement activities	Standardization of front-line improvement activities to policy control	Enhancement of management system according to function	<ul style="list-style-type: none"> • Full-scale management system according to function • Substantial improvement of QC circle activities
Target	Development into headquarters, sales division and subsidiary factories	Making the promotion basis by introducing TQC	Making a satisfactory manager supporting system	Deliberate promotion of circle activities	Improvement of deliberateness of circle activities		
Growing circles capable of solving problems by themselves	<p>Promotion of deliberative circle activities</p> <ul style="list-style-type: none"> • Company-wide promotion organization • Meeting by responsible persons <p>From one-way education to mutual education</p> <ul style="list-style-type: none"> • QC circle activity manual (for beginners, methods) • Leader training (internal, subsidiary factories, affiliated companies) • Dispatch of off-the-job training • On-a-ship training • On-a-ship school <p>Support by PTA with scrupulous care</p> <ul style="list-style-type: none"> • QC circle activity manual (for managers) • PTA training • TQC Director's policy • Development of system to grasp the state of activities • PTA supporting plan • Sectional presentation <p>Awarding just on achievement</p> <ul style="list-style-type: none"> • System of theme registration and completion • Awarding system • Special award system • Establishment of awarding standard <p>Rollout through in-company conference</p> <ul style="list-style-type: none"> • Company-wide conference (held on holiday) • Subsidiary factories conference • Company-wide conference • Self-management by factories in turn • In-company selection of candidates for TQC Director's Award • Affiliated companies conference <p>Contests with other companies through external conference or exchange meeting</p> <ul style="list-style-type: none"> • Participation in external conferences • Holding or participation in exchange meeting • Selection for All-Japan conference (TQC Director's Silver Award) ————— (Gold Award) ——— (Silver Award) • International exchange meeting (in Korea) 						<ul style="list-style-type: none"> • Circle members became to feel the sense of PDCA. • A place of practical training by mutual teaching became available.
Support by PTA and promoters							<ul style="list-style-type: none"> • Communications with PTA circle became better. • A place for all members to participate was available. • Target of the activities became clear.
Making a place for achievement and mutual enlightenment							
Special notes	Introduction of examples in FQC magazine	Company in charge of managing North Kyushu Branch	• Company in charge of managing Kyushu Branch • Visit of FQC magazine to Yahata Factory	Appearance on the cover of FQC magazine	Introduction of activities in FQC magazine		
Results	Start of company-wide activities by all divisions	Clarification of positioning as a part of TQC	Achievement of year's target		Increase of self-sustaining circles		
Problems	Insufficient understanding of managers and supervisors concerning independence	<ul style="list-style-type: none"> • Inconsistent target to complete a theme • Insufficient support of managers 	<ul style="list-style-type: none"> • Activities become liable to complete at the end of month. • Number of completed themes varies with sections. 	Completion delays to the plan (one month in average).	Dispersion among divisions becomes greater.		

Figure 5 QC tools used in the QC Storyline procedure

QC methods	QC Storyline steps	Introduction	Theme selection	Fact analysis	Action plan	Factor analysis	Corrective action	Confirmation of effect	Lock-in of effect	Review of remaining problems	Planning for future
Seven QC Tools	Bar graphs	☆☆	☆☆☆	☆☆☆		☆☆☆		☆☆☆	☆☆☆		
	Line graphs		☆☆☆	☆☆☆		☆☆☆		☆☆☆	☆☆☆		
	Pie charts	☆	☆☆	☆☆		☆☆		☆☆	☆☆		
	Band graphs	☆	☆☆	☆☆		☆☆		☆☆	☆☆		
	Gantt charts				☆☆☆		☆☆☆		☆☆		
	Radar charts	☆	☆☆	☆				☆☆		☆☆☆	☆
	Isographs	☆☆	☆☆	☆		☆		☆☆			
Control charts			☆☆		☆☆		☆☆	☆☆☆			
New Seven QC Tools	2. Cause-and-effect diagrams		☆☆☆	☆☆		☆☆☆	☆☆☆		☆☆	☆☆	☆☆
	3. Pareto charts		☆☆☆	☆☆☆		☆☆		☆☆		☆☆	
	4. Stratification	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆
	5. Checksheets		☆☆	☆☆☆		☆☆☆		☆☆☆	☆☆		
	6. Histograms		☆☆	☆☆		☆☆☆		☆☆☆			
	7. Scatter diagrams	☆☆		☆☆		☆☆		☆☆			
	1. Relationship diagrams		☆☆	☆☆		☆☆☆	☆☆				
2. Tree diagrams.			☆☆	☆☆		☆☆☆	☆☆☆	☆☆	☆☆	☆☆☆	☆☆☆
3. Two-way matrices	☆		☆☆	☆☆		☆☆☆	☆☆☆	☆☆	☆☆	☆☆	☆☆
4. Affinity diagrams			☆☆☆	☆☆		☆☆	☆☆			☆☆	☆☆
5. Arrow diagrams			☆☆	☆☆	☆☆☆	☆☆	☆☆☆		☆☆	☆☆	☆☆☆
6. PDPC			☆☆	☆☆		☆☆	☆☆☆	☆☆			☆☆
7. Matrix data analysis			☆☆			☆☆					

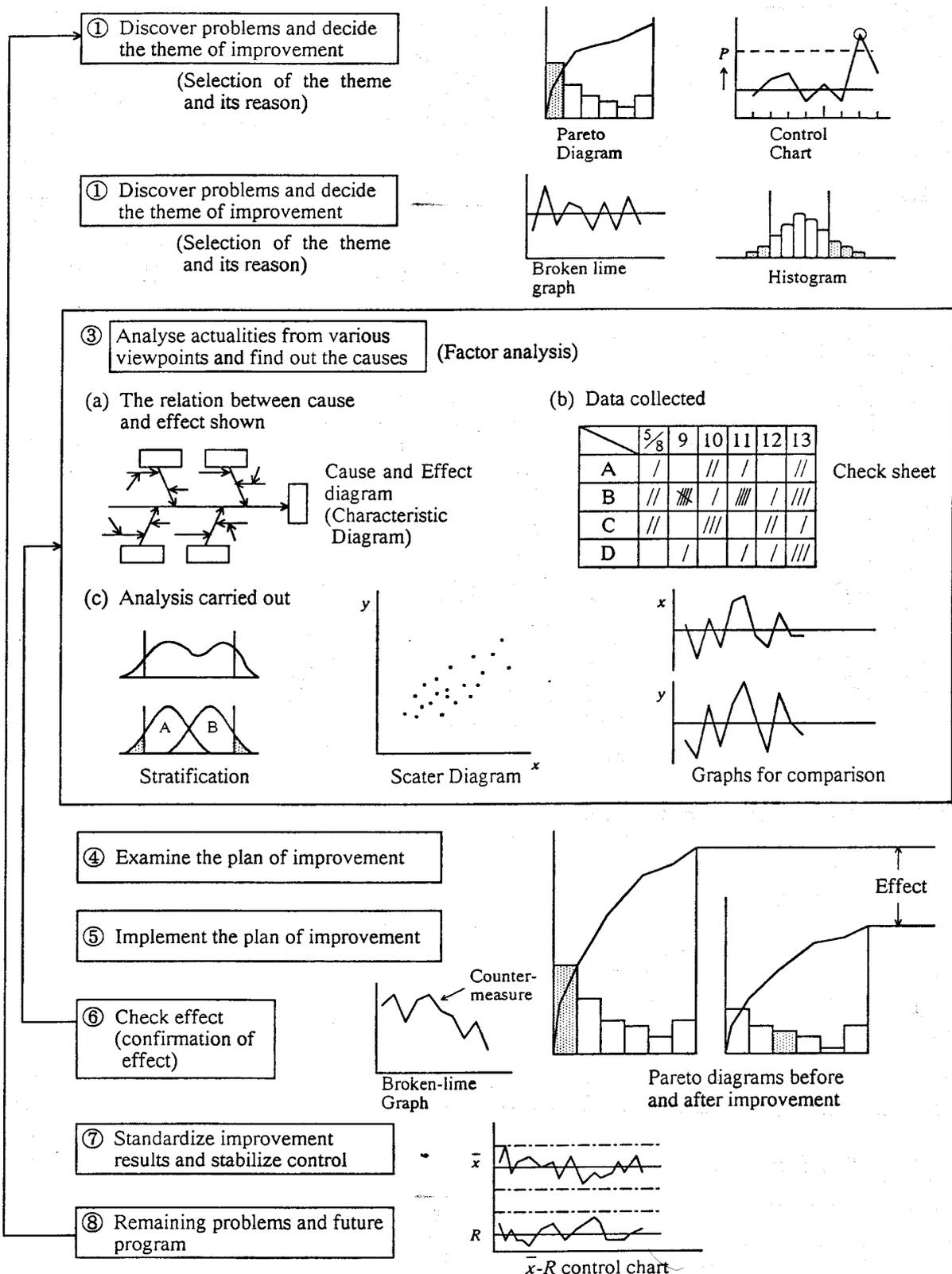


Fig. Problem Solving Procedure (QC story) and application of QC Tools (Example)

Skill Training

Tadashi Miyamoto

There is "ILUO method" in the technique of the skill training.
Its purpose and how to use the method is described to below.

1 Purpose

There is a system which shows the level to a used system by the form of the character of "ILUO" to mention employee's skill.

This is the system which expresses the level of the skill each person possesses in the character..

It's the first purpose to do for the evaluation of the level of each person to judge education and training necessary to each person. Evaluation is also used for the judgment which is about a salary and work/job, but they aren't supposed to forget that there is a first purpose for education and training. If being estimated only for treatment not training, the estimated employee isn't cooperative naturally.

If you use evaluation for wrong purpose, those behaviors would cause deception and behavior of its place endurance.

When 5S is executed for the purpose of just showing "Clean Place" to others, "5S" isn't fixed. An employee does the imitation doing "5S" only at the time when a supervisor is in the sight. If there isn't a supervisor any more, an employee returns to selfishness's behaving willfully like before. It's because the purpose of 5S is interpreted by mistake. It's same as this.

Therefore evaluation has to be connected with education and training. Then, evaluation bears the effect.

2 The success condition of the education and training.

There are 2 conditions for success.

(1) The person who receives education and training understand the purpose and necessity with the level of own now. Understand that the person himself does for oneself. Practice isn't for others; they do for one.

Because, there are no self consciousnesses of trainees, they don't accept/acquire any training aggressively.

(2) A senior person does education and training by an act for subordinate's man. The skill isn't transmitted in the lecture. That's to act, and it's transmitted. Even if a manual is read, a technician doesn't go up the level of the skill. A skill is to behave with a senior person, and it's transmitted to a trainee. A skill isn't Logic, just an Act.

3. Four elements.

The following 4 elements (=4M) are needed to do effective education and training.

(1) Teacher (=Man).

When a student doesn't learn from a good teacher, there are no good students born naturally.

A teacher needs that he's the person who reaches the last stage/level of ILUO.

(2) Educational way (=Method). "

The teaching method is also different depending on educational contents and level.

There are an appropriate curriculum is complete beforehand.

(3) Teaching materials (=Machine).

The manual to teach and apparatus be prepared.

(4) Student (=Material).

Necessary basic knowledge for student must be completed. Have a necessary experience.

The result of education and training must be checked after ending every time. And, these 4 elements must be improved step by step. That's KAIZEN. PDCA is needed also at this occasion.

4. Evaluation of education/training.

(This is indication of 4 evaluation levels using ILUO characters. The 4 levels repartition is basic. It changes by the training target or an enterprise.)

"I"= first level. Correct knowledge is acquired about the Skill.

Ex. The function of the numerically controlled lathe; Structure; The operation method can be explained.

Work until an end of a complete/last check/test of product can explain after a drawing is received.

"L"= They can work with a leader.

Ex. A drawing is received and the processing contents are understood. A tool and a jig are selected. data of the processing specification is put in from manual operating panel. A machine is operated and processed. Concluded product inspection can be done while having guidance.

“U”= They can carry out all processes by themselves.

Ex. A drawing is received, and processing data is thrown by reading drawing. They can do select jig and the tool. It's designated until a check of finished goods, by a due date.

And they are also possible to find a new KAIZEN point.

"O"= education and training can do others about Skill concerned. (With various experiences)

Ex. The person can be in charge of rookie training and leader in KAIZEN Project.

5 Effective how to use (the way performed in Japan).

1) The evaluation contents every 4 level are opened to all the members. At that time, person be evaluated (=worker) is participated too, so that they can understand well, and the evaluation contents are put in order.

(When being divisible into the level a lot, it's done so that worker doesn't have a confusion/doubt. It makes sure that all the members will understand the contents every level. It's specified using a proper noun for it.

When it's ambiguous, an adverse effect is caused.)

2) An administrator and an employee confer and decide the target arrival/next level of this season each other.

It is as a part of a management by “Objective system”.

3) The level of worker all the members is put up and it's made a mutual encouragement.

It's made an administrator in a part of their supervisor responsibility.

Education is administrator's work/job/task and responsibility.

4) They make treatment of a qualification system and the salary reflected.

PS

The format which Kokura plant of ToTo CO. Ltd. uses is shown in another page.

1). Shown level of the skill is 2 kinds. The level of the skill necessary to the present work and the level of the skill they challenge in the next.

2).The evaluation contents of a skill are written specifically conversantly.

3). One's own target level and expectation level of the administrator of this season are written.

4).This format is put up in an aisle.

End

Necessary matters for expanding KAIZEN(Improvement) Movement

- ① The exercising person must make the group.
You will be outcast if individually isolated in the organization/ society.
The organization is needed when it consists of a lot of members.
For instance, “Promotion Conference” or “ Academic Function” shall be organized at the very beginning.
- ② Provide “Place; Opportunity” for exchanging the Know-how each other.
- ③ Make the expanding “Mechanism”.
Eg. Training and level of consultants are united (qualification system).
Make the system relevant to the regional issues by setting up the branch in the provinces.
- ④ Adjustment with the Policy of Government and Local Government.
The top policy; Such as for the development of nation and province (increase the living standards for the inhabitants).
Necessary that the Policy (Program) matches such directions (trends).
- ⑤ The successful group (Consultation & Education) has to hold a regular meeting with the customer so that the group can reflect the customer’s changing needs.
Eg. In Japan, they commend the group selected in facility where the excellent enterprise in the economic world. The successful group and the economic world are keeping this implications. Of course, the Ministry of Economy, Trade and Industry are also joining the activity.
- ⑥ Promote with the Plan
The things above mentioned should be done systematically as a whole.