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Preface

This Standard has been established by the Japanese Society for Quality Control (hereafter JSQC) through the deliberations of the Technical Board, under the administrative provisions of the JSQC.

This Standard represents the work protected under the Copyright Act.

Note that several parts of the standard may conflict with patents, patent applications after the laying open of the applications, utility model rights or utility model right applications after the laying open of the applications. JSQC shall not be responsible for confirming whether those parts of the standard infringe upon any of these patents, patent applications after the laying open of the applications, utility model rights or utility model right applications after the laying open of the applications.



Guidelines for Quality Management Education and Training

(Note: This document is an official English translation of JSQC-Std 41-001:2017 written in Japanese.)

Introduction

The business environment surrounding an organization is changing significantly. For an organization to continue fulfilling its mission steadily, therefore, it must accurately grasp the changes, set business objectives and strategies in accordance with the situation surrounding the organization and the strengths of the organization and alter its traditional way of working continually in order to achieve them. However, in an organization composed of many people with diverse ideas and values, it is difficult to cooperate with one another, and the organization cannot rid itself of the conventional approach. One method to overcome such a situation is Total Quality Management (hereafter abbreviated as TQM). TQM was born in Japan between 1960s-1970s by practicing the concept and method of Quality Control introduced from Europe and the United States. Today, it is being used to good effect not only in Japan but all over the world, not only in the manufacturing industry but also in the service and retail industries, and in all fields such as energy, communication, transportation, medical care, welfare, education, finance, etc.

When implementing TQM, it is necessary for each member of the organization to address specific activities such as policy management, daily management, small group improvement activities, and quality assurance after having understood the fundamental principles. However, there are few norms on how to develop human resources who have the ability to carry out these activities appropriately, and each organization establishes its own layer-wise and field-wise education and training system and quality management education and training system based on the situation in that organization. As a result, there are organizations that have not been able to adequately develop human resources with the necessary abilities related to quality management, such as problem-solving, and hence, have not been able to implement TQM properly.

This standard provides guidelines for planning, implementing, evaluating, and improving quality management education and training necessary for the suitable promotion of TQM, and can be applied in any organization. Clause 4 of this standard describes the role of quality management education and training in TQM, the role of top management in quality management education and training, the required human resources and abilities in TQM, and the layer-wise and field-wise education and training system, which form the fundamentals of the quality management education and training. And, Clause 5 outlines the management process and organizational structure for quality management education and training, and Clauses 6 to 8 explain the recommendations at each stage on planning, implementation, evaluation, and improvement of quality management education and training. Finally, Clause 9 focuses on quality management education and training for each phase i.e. introduction, development, and making ingrained stages of TQM, department-wise quality management education and training, and human resource development at overseas sites, and provides supplementary recommendations.

In addition, quality management education and training is less effective if conducted in one department or company. It is necessary to extend its scope to all the departments and even to affiliates and partners. In this

standard, the term "organization" is used, but it is better to include all departments and group companies involved in the provision of products and services.

1. Scope

This standard prescribes the matters recommended by JSQC concerning quality management education and training which is one of the main activities of quality management.

2. Normative references

The following standard forms a part of the provisions of this standard, as it is cited here. Only the version for the stated year is applicable and no revised versions and amendments are applicable.

JSQC-Std 00-001: 2011 Quality Management Terms

3. Terms and definitions

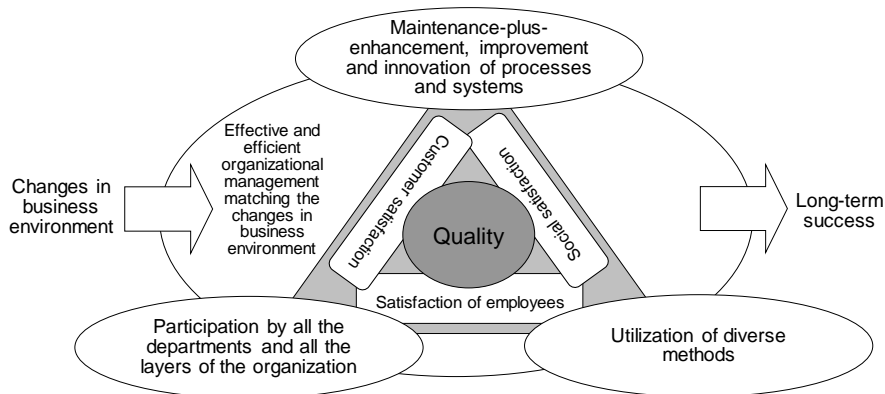
Terms and definitions mentioned in JSQC-Std 00-001 and the following terms and definitions are applicable in this standard. The following terms and definitions include those cited/represented from other standards.

3.1 Total quality management / TQM

Activities with quality at the core, whose aim is a long-term success of an organization through provision of products and services that meet the needs of customers and society as well as the satisfaction of the people working in that organization, for maintaining, improving, and innovating processes and systems using diverse methods by all the departments and all the layers of the organization, to achieve effective and efficient organizational management matching the changes in the business environment.

Note 1 Customer and social needs may be explicit, implicit, or latent.

Note 2 The relationship between important elements related to total quality management is shown in the figure below.



(Same as JSQC-Std 00-001:2011)

3.2 Quality management

Activities to effectively and efficiently achieve the quality of products and services that meet the needs of customers and society.

Note 1 Quality management is the activity to achieve quality ensurance effectively and efficiently.

Note 2 Customer and social needs are wide-ranged such as functions, performance, safety, reliability, operability, environmental conservation, and economic efficiency of products and services.

Note 3 The quality of products and services takes into account users, prospective customers, target markets, and society.

(Same as JSQC-Std 00-001:2011)

3.3 Quality management education and training

Activities for systematic human resource development so that the members of the organization can acquire the values, knowledge, and skills necessary to effectively and efficiently achieve products and services that meet the needs of customers and society.

(Same as JSQC-Std 00-001:2011)

Note Quality management education and training includes content aimed at acquiring values, content aimed at acquiring knowledge and skills, and content aimed at improving the ability to apply them to practical work. Content aimed at improving the ability to apply values, knowledge and skills to practical work is sometimes called practical education and training.

3.4 Organizational ability

The ability of an organization or department to perform specific activities.

Note 1 Specific activities include function-specific activities such as business planning and operation, planning, design and development, procurement, manufacturing, logistics, sales, service, personnel, finance etc., as well as cross-functional management activities such as quality management, cost management, quantity and delivery management, environmental management and safety management.

Note 2 Organizational ability is demonstrated through activities.

3.5 Layer-wise and field-wise education and training system

A list of all the training programs in the organization, organized by layer and field.

Note 1 Layer refers to a layer of the organization, and refers to senior management, department heads, section heads, line in charge, supervisors, general employees, new employees, etc.

Note 2 The field refers to the field of ability, and refers to the basic skills as an organizational person, field-specific technologies and techniques related to products and services and their production and provision, and the skills for quality management.

3.6 Training program

Training conducted according to a specific curriculum for those who satisfy specific conditions, aimed at

acquiring specific knowledge and skills and improving their ability to apply them to practical work.

Note: Training program includes education and training that imparts certain content, and practical education and training that takes up actual problems/tasks from one's own work and enables learning the process of solving/achieving them on the ground.

4. Fundamentals of quality management education and training

4.1 Role of quality management education and training in TQM

TQM: Total Quality Management is a set of activities:

- whose aim is long-term success of an organization through provision of products and services that meet the needs of customers and society as well as satisfaction of the people working in that organization,
- for maintaining, improving and innovating processes and systems,
- by all the departments and all the layers of the organization,

to achieve effective and efficient organizational management matching the changes in business environment.

Fig. 1 illustrates the role and positioning of quality management education and training in TQM.

In recent years, the environment surrounding an organization has changed drastically and its speed has also been accelerating. As a result, the needs of customers and society are constantly changing, so that it is necessary to constantly create value being sought by customers in order to secure customer's satisfaction (quality assurance). Failure to do so will result in customer alienation and losing out to competition.

In order to implement such value creation effectively and efficiently, it is necessary to continuously implement

maintenance-plus-enhancement, improvement and innovation of processes and systems through the involvement of all the departments and all the layers. In order to promote this, it is necessary to systematically engage in daily management, policy management, and small group improvement activities.

For implementing TQM as described above, it is necessary that the organization has the abilities to do so. In order to support such organizational abilities, each person working in the organization must have the abilities to do so. Quality management education and training is a systematic set of human resource development activities for the members of an organization to acquire the values, knowledge, and skills necessary to effectively and efficiently achieve products and services that meet the needs of customers and society.

There are two ways to secure talented people: one is to acquire human resources from outside as needed, and the other is to train internal human resources. Acquiring human resources from outside may be effective in the short term, but it is not enough. Quality management education and training focused on internal human resource development and ability development is essential.

TQM is not something that can be done only by some people, and everyone needs to be involved. There are many different problems and tasks in the organization, and it is difficult for only a part of the people to solve and

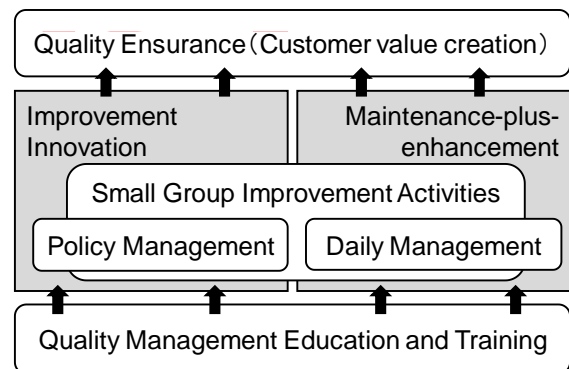


Fig. 1 Role of quality management education and training in TQM

achieve them. In addition, it is rare that one person has all the necessary knowledge and skills, and it is necessary for multiple number of people to cooperate and collaborate, and for that values must be shared. In addition, even if improvements are achieved by utilizing outside human resources, it is difficult to sustain the results or further develop them unless other people in the organization understand the results and are convinced about them.

On the other hand, from the working people's point of view, it is important to be able to build a career and to be able to discover and demonstrate their own potential, and it is necessary that human resource development to support this is practiced within the organization. This will increase the satisfaction of each employee and increase their motivation for work and loyalty towards the organization.

Since many people working in an organization will be replaced in about 10 years, quality management education and training needs to be conducted on continuous basis, like other education and training programs. Therefore, it is important to have the organization and plan for quality management education and training and the resources to support such program.

In addition, quality management education and training will have a synergistic effect if it complements various other education and training content. For example, it is more effective to combine education and training on daily management and policy management rather than providing education and training only on policy management. Or to impart education and training for general employees and managers together instead of education and training only to engineers and staff. Hence, quality management education and training must be carried out systematically.

In addition, changes in the business environment surrounding the organization are increasing, and it is necessary to acquire organizational abilities that can help in responding to such changes. However, quality management education and training is not effective in the short-term. For this reason, quality management education and training initiative needs to be strategically designed from a medium to long-term perspective. To be more precise, it is important to plan and review the content for a three-to-five-years span in accordance with the business objectives and strategies of the organization expanding the horizon to even outside the organization. For example, in an organization that is promoting global expansion, it is necessary to consider in the long-term to develop local human resources as well as dispatched engineers and managers.

4.2 Top management's roles in quality management education and training

Only the top management of the organization can make the decision to introduce and promote TQM. Decision making regarding implementation of quality management education and training is also the role of the top management. The main roles that top management should play in quality management education and training are listed below:

- In view of the situation surrounding the organization, fix the direction to go, medium and long-term business plan and policy of the organization and articulate organizational abilities necessary to achieve them.
- Make all the employees understand and convince them about the importance of TQM and the quality management education and training for it through their own remarks and actions.
- Direct the department in charge to develop quality management education and training system and organization/process for quality management education and training and implement quality management education and training systematically so that all the employees can acquire the required TQM skills according

to their layer and job type.

- Secure necessary resources for quality management education and training.
- Along with regularly receiving reports on the implementation status of quality management education and training from the department in charge, understand problems and tasks in the implementation, and give advice to the department.
- Directly confirm effectiveness of quality management education and training by understanding employees' awareness about quality and their problem-solving ability based on reports from employees and discussions with them.
- In addition to accurately grasping changes in the environment surrounding the organization and changes in the needs of customers and society, confirm whether the content of the current quality management education and training is appropriate for the business objectives, strategies and TQM promotion plan of the organization. Also, instruct the department in charge to continually review (improve) the content of quality management education and training.
- Make affiliates and partners understand the importance of TQM and quality management education and training and support their dissemination.
- Pay close attention to TQM trends in the society and obtain information. For example, the top management itself actively participates in TQM-related lectures and symposiums. In TQM, it is also important to network with academics and industry experts and experienced people in order to promote TQM in own organization and put it to use for quality management education and training. At times, consulting a quality management specialist to conduct diagnosis or provide guidance is also an effective method.

Generally, it is difficult to grasp the effects of education and training quantitatively. Many organizations know how much they are investing in education and training, but often fail to calculate their financial effect. It is the same for quality management education and training. For this reason, if the performance of the organization is sluggish, it adopts initiatives for cost reduction, and one of the first things targeted at that time is the education and training expense. Since education and training expense does not immediately translate into performance, reducing costs has negligible impact in the short term. However, in the long run, individual abilities drop, organizational abilities and vitality decline, and eventually lead to deterioration in performance. And increasing education and training expense at that stage is too late. As described above, the effects of quality management education and training cannot be measured from a short-term perspective, and investment decisions must be made by the top management based on their own beliefs. In addition, it is important for the department in charge of quality management education and training to provide information and make proposals so that top management can take such actions.

Even if only some people have the ability, they cannot perform enough as an organization. For this reason, quality management education and training should not be left to individuals alone but must be carried out as the responsibility of the entire organization. On the other hand, in such an environment, it is an individual's responsibility to strive to improve the skills required by the organization and develop and utilize their respective abilities. It is important for the top management to support such a mutually beneficial relationship between the organization and the individuals.

4.3 Human resources and abilities required in TQM

During practice of TQM, it is necessary that each individual working in the organization understands his/her own position and role, and takes up maintenance-plus-enhancement, continuous improvement and innovation of processes and systems to meet the needs of customers and society (including post-processes).

Therefore, each person is required to have the following abilities related to TQM:

- a) Understanding and ability to apply fundamental terms/concepts, principles etc. Fundamental terms/concepts include quality, process, system, maintenance-plus-enhancement, improvement, etc. And principles include customer focus, process orientation, standardization, PDCA cycle, prioritization, fact-based control, total employee involvement, respect for humanity etc. In addition, it is important to be able to utilize the problem-solving procedures (QC stories including task achievement type and prevention type) that make the PDCA cycle more specific. It is also necessary to understand the role and overall picture of TQM. (Refer to JSQC-Std 00-001.)
- b) Understanding and applying methods for operating an organization. Main methods for operating an organization include policy management, daily management, and small group improvement activities. (Refer to JSQC-Std 31-001, JSQC-Std 32-001 and JSQC-Std 33-001.)
- c) Understanding and applying methods for customer value creation and process assurance. The main methods include grasping latent needs, identifying and solving bottleneck technologies, predicting and preventing troubles, investigating and improving process capability, inspection and degree of assurance, utilization and analysis of market quality information, and quality assurance systems etc. (Refer to JSQC-Std 21-001.)
- d) Understanding and applying tools and mathematics. The main tools include seven QC tools, new seven QC tools, control chart, sampling inspection/sampling, statistical test/estimation, design of experiments, quality engineering (Taguchi method), multivariate analysis methods, reliability methods and so on.

The level required for each of the above abilities depends on the position and role of each person in the organization. **Table 1** shows people who play important roles and indicates their required abilities and levels:

- Senior management: Person who makes the plan for business to be carried out by the organization and guides the organization in the desired/ideal direction.
- Manager: Person who becomes key to vertical and horizontal cooperation in the organization and strives for improvement of organizational abilities.
- Supervisor (foreman): Person who directs and guides general employees.
- General employee : Person engaged in work at production shop floor or site of service offering, person engaged in work at office workplace or sales office.
- Design and production engineers: Engineers involved in product design, process design, and technology development for that (including engineers in management and indirect workplaces such as production management and safety management etc.).
- Quality management specialist: Person who specializes in TQM and quality assurance activities, such as solving and achieving quality problems and tasks and providing guidance and support for it.
- TQM Promoter: Person in charge of promotion (planning, deployment and review) of TQM and quality assurance in the organization.

Items on the vertical axis of this table, "TQM abilities", also correspond to the Quality Management and Quality Control Examination Level Table (approved by JSQC), and can be used when planning and evaluating the abilities of organizations and individuals related to TQM in Clauses 6 to 8. As this table is only a guideline, it is better for each organization to consider what suits its own organization by referring to this table (see Clause 6).

Table 1 Positions and roles in the organization and required TQM capabilities and standards

TQM abilities		Position/role						
		Senior management	Manager	Supervisor	General employee	Design and production engineer	Quality management specialist	TQM promoter
Fundamental	Terms and concepts	○	○	○	○	○	◎	◎
	Principles	◎	◎	◎	◎	◎	◎	◎
	Problem-solving procedures (QC Story)	◎	◎	◎	◎	◎	◎	◎
	TQM	◎	◎	○		○	◎	◎
Organizational operation	Policy management	◎	◎	○		○	○	◎
	Standardization/daily management	○	◎	◎	○	○	◎	◎
	Small group improvement activities	○	◎	◎	◎	○	○	◎
	Quality management education and training	○	○	○		○	○	◎
Customer value creation/ quality assurance by processes	Understand potential needs					◎	○	○
	Identification and resolution of bottleneck technologies					◎	◎	○
	Prediction and prevention of troubles		○			◎	○	○
	Investigation and improvement of process capability			○		◎	◎	○
	Inspection and degree of assurance			○		○	◎	○
	Utilization and analysis of market quality information		○			○	◎	○
	Quality assurance system	○	◎	○	○	○	◎	◎
	Total management including environment and safety etc.	○	◎	○		○	○	◎
Tools/ mathematics	Seven QC tools	○	◎	◎	◎	◎	◎	◎
	New seven QC tools	○	○	◎	◎	◎	◎	◎
	Control chart		○	◎	○	○	◎	◎
	Sampling inspection/sampling			○		○	◎	◎
	Statistical test/estimation			○		◎	◎	◎
	Design of experiments			○		◎	◎	○
	Quality engineering (Taguchi method)					◎	◎	○
	Multivariate analysis methods					◎	◎	○
	Quality function deployment					◎	◎	○
	Reliability methods					◎	◎	○
	OR methods					○	○	○
IE methods/VE methods					○	○	○	

Note 1: Symbols in the table indicate the level of ability required.

◎: Need to be able to utilize (including guidance to others).

○: Must have as knowledge. Blank: It is desirable but not a must.

Note 2: The required level of ability is compilation of opinions of many experts and should be positioned as having horizontal range.

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