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Quality management — Guidelines for training

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10015 was prepared by Technical Committee ISO/TC 176, *Quality management and quality assurance*, Subcommittee SC 3, *Supporting technologies*.

Annex A of this International Standard is for information only.

Introduction

The Quality management principles underlying the ISO 9000 family of standards (of which the ISO 10000 series form a part) emphasize the importance of human resource management and the need for appropriate training. They recognize that customers are likely to both respect and value an organization's commitment to its human resources and its ability to demonstrate the strategy used to improve the competence of its personnel.

Personnel at all levels should be trained to meet the organization's commitment to supply products of a required quality in a rapidly changing market place where customer requirements and expectations are increasing continuously.

This International Standard provides guidelines to assist organizations and their personnel when addressing issues related to training. It may be applied whenever guidance is required to interpret references to "education" and "training" within the ISO 9000 family of quality assurance and quality management standards. Any references to "training" in this document includes all types of education and training.

An organization's objectives for continual improvement, including the performance of its personnel, might be affected by a number of internal and external factors including changes in markets, technology, innovation, and the requirements of customers and other stakeholders. Such changes may require an organization to analyse its competence-related needs. Figure 1 illustrates how training could be selected as an effective means of addressing these needs.

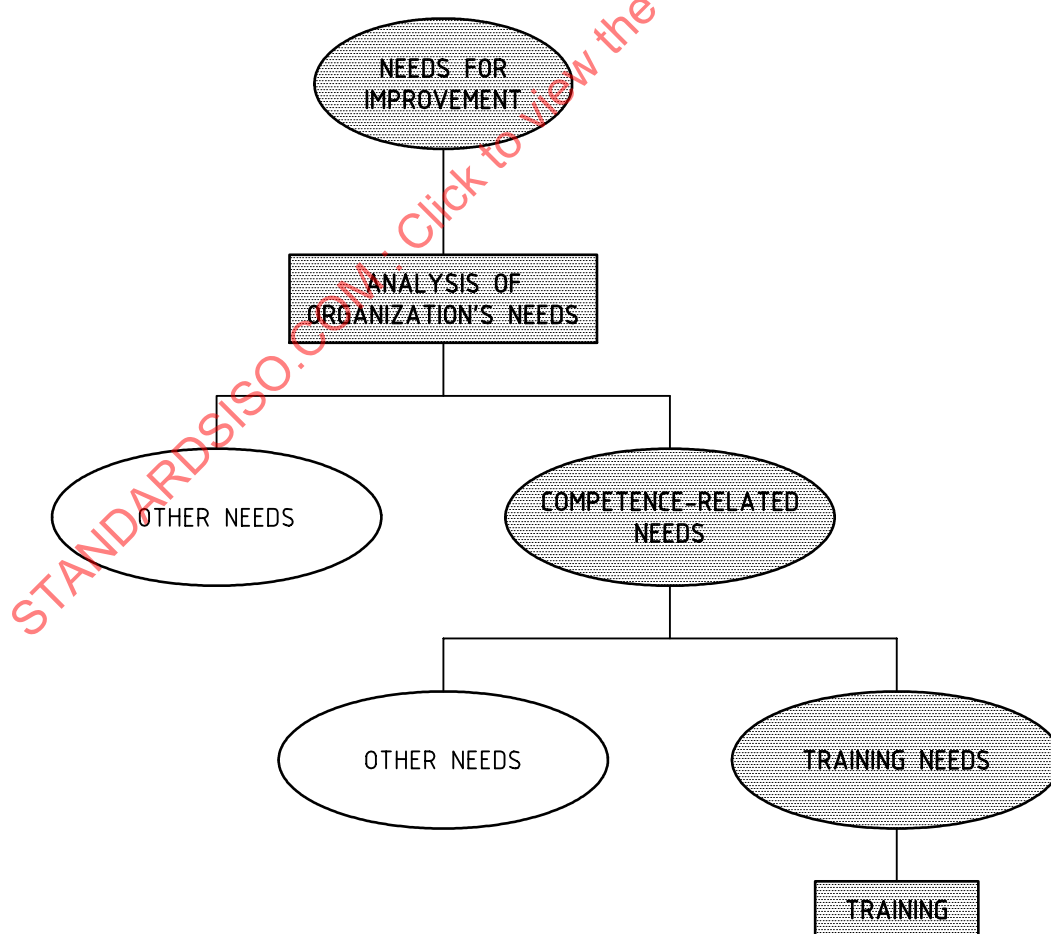


Figure 1 — Improving quality by training

The role of this International Standard is to provide guidance that can help an organization to identify and analyse training needs, design and plan the training, provide for the training, evaluate training outcomes, and monitor and improve the training process in order to achieve its objectives. It emphasizes the contribution of training to continual improvement and is intended to help organizations make their training a more effective and efficient investment.

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Quality management — Guidelines for training

1 Scope

These guidelines cover the development, implementation, maintenance, and improvement of strategies and systems for training that affect the quality of the products supplied by an organization.

This International Standard applies to all types of organizations.

It is not intended for use in contracts, regulations, or for certification.

It does not add to, change, or otherwise modify requirements for the ISO 9000 series.

This International Standard is not intended to be used by training providers delivering services to other organizations.

NOTE The main source of reference for training providers should be ISO 9004-2:1991, *Quality management and quality system elements — Part 2: Guidelines for services*, until superseded by ISO 9004:2000.

Training providers may use this International Standard when addressing the training needs of their own personnel.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of this publication do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8402, *Quality management and quality assurance — Vocabulary*¹⁾.

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 8402 and the following apply.

3.1

competence

application of knowledge, skills, and behaviours in performance

3.2

training

process to provide and develop knowledge, skills and behaviours to meet requirements

1) To be revised as ISO 9000:2000.

4 Guidelines for training

4.1 Training: A four-stage process

4.1.1 General

A planned and systematic training process can make an important contribution in helping an organization to improve its capabilities and to meet its quality objectives.

This training process is illustrated in the training cycle diagram shown in Figure 2.

To increase the readability of this International Standard and to distinguish clearly between guidance and use of the process model to describe the guidance, the process model appears in Tables A.1 to A.5 in annex A.

For selecting and implementing training to close the gaps between required and existing competence, management should monitor the following stages:

- a) defining training needs;
- b) designing and planning training;
- c) providing for the training;
- d) evaluating the outcome of training.

As illustrated, the output of one stage will provide the input for the following stage.

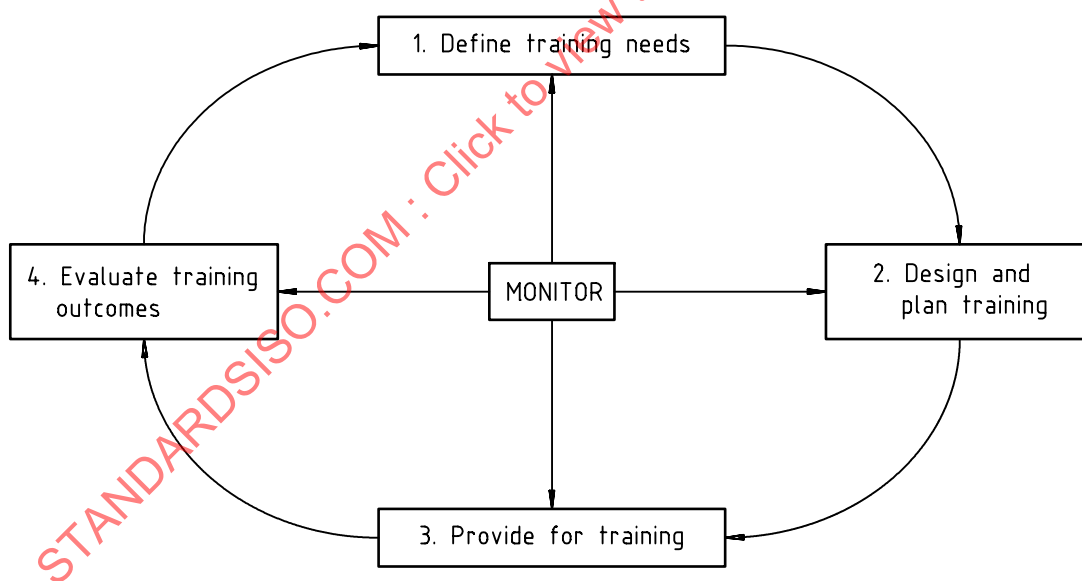


Figure 2 — Training cycle

4.1.2 Purchase of training-related products and services

It should be the responsibility of the management to decide if and when the external or internal purchasing and resourcing of products and services related to any of the four stages of the training process, and its monitoring, should occur (see Tables A.1 to A.5).

For example, some organizations might find it beneficial to use external expertise to carry out an analysis of its training needs.

4.1.3 Involvement of personnel

Appropriate involvement of the personnel whose competence is being developed, as part of the training process, may result in those personnel feeling a greater sense of ownership of the process, resulting in their assuming more responsibility for ensuring its success.

4.2 Defining training needs

4.2.1 General

The training process should be initiated after a needs analysis of the organization has been conducted and competence-related issues have been recorded, as depicted in Figure 1 in the Introduction.

The organization should define the competence needed for each task that affects the quality of products, assess the competence of the personnel to perform the task, and develop plans to close any competence gaps that may exist.

The definition should be based on an analysis of present and expected needs of the organization compared with the existing competence of its personnel.

The purpose of this stage should be to:

- a) define the gaps between the existing and required competence;
- b) define the training needed by employees whose existing competence does not match the competence required for the tasks; and
- c) document specified training needs.

The analysis of the gaps between existing and required competence should be conducted to determine whether the gaps can be closed by training or whether other actions might be necessary (see Table A.1).

4.2.2 Defining the needs of the organization

The organization's quality and training policies, quality management requirements, resource management and process design should be considered when initiating training, as an input to 4.2, to ensure that the required training will be directed toward satisfying the organization's needs.

4.2.3 Defining and analysing competence requirements

Competence requirements should be documented. This documentation can be periodically reviewed or as necessary when work assignments are made and performance is assessed.

The definition of an organization's future needs relative to its strategic goals and quality objectives, including the required competence of its personnel, may be derived from a variety of internal and external sources, such as:

- organizational or technological change that affects work processes or impacts on the nature of products supplied by the organization;
- data recorded from past or current training processes;
- the organization's appraisal of the competence of the personnel to perform specified tasks;
- turnover or seasonal fluctuation records involving temporary personnel;
- internal or external certification needed for the performance of specific tasks;

- requests from employees identifying opportunities for personal development which contribute to the organization's objectives;
- the result of process reviews and corrective actions due to customer complaints or reports of nonconformities;
- legislation, regulations, standards and directives affecting the organization, its activities and resources; and
- market research identifying or anticipating new customer requirements.

4.2.4 Reviewing competence

A regular review should be conducted of documents that indicate the competence required for every process and the records that list the competence of every employee.

Methods used for reviewing competence might include the following:

- interviews/questionnaire with employees, supervisors, managers;
- observations;
- group discussions; and
- inputs from subject matter experts.

The review is related to task requirements and task performance.

4.2.5 Defining competence gaps

A comparison of the existing competencies with those required should be made to define and record the competence gaps.

4.2.6 Identifying solutions to close the competence gaps

The solutions to close the competence gaps could be found through training or other actions of the organization, such as redesigning processes, recruitment of fully trained personnel, outsourcing, improving other resources, job rotation or modifying work procedures.

4.2.7 Defining the specification for training needs

When a training solution is selected to close the competence gaps, training needs should be specified and documented.

The specification for training needs should document the objectives and the expected outcomes of the training. The input to the specification for training needs should be provided by the list of competence requirements found in 4.2.3, the results of previous training, and current competence gaps and requests for corrective action.

This document should become part of the training plan specification and should include a record of the organization's objectives which will be considered as inputs for designing and planning training and for monitoring the training process.

4.3 Designing and planning training

4.3.1 General

The design and plan stage provides the basis for the training plan specification.

This stage includes:

- a) design and planning of actions which should be taken to address the competence gaps identified in 4.2.5; and
- b) definition of the criteria for evaluating the training outcomes and monitoring the training process (see 4.5, clause 5 and Table A.2).

4.3.2 Defining the constraints

Relevant items which constrain the training process should be determined and listed.

These might include:

- regulatory requirements imposed by laws;
- the policy requirements, including those relating to human resources, imposed by the organization;
- financial considerations;
- timing and scheduling requirements;
- the availability, motivation and ability of the individuals to be trained;
- factors such as the availability of in-house resources to perform the training, or the availability of reputable training providers; and
- constraints on any other available resources.

The list of constraints should be used in the selection of training methods (4.3.3) and training provider (4.3.5) and for the development of a training plan specification (4.3.4).

4.3.3 Training methods and criteria for selection

Potential training methods to meet the training needs should be listed. The appropriate form of training will depend on the listed resources, constraints and objectives.

Training methods might include:

- courses and workshops on or off site;
- apprenticeships;
- on-the-job coaching and counselling;
- self-training; and
- distance learning.

Criteria for selection of the appropriate methods, or combination of methods, should be defined and documented.

These may include:

- date and location;
- facilities;
- cost;

- training objectives;
- target group of trainees (e.g. current or planned professional position, specific expertise and/or experience, maximum number of participants);
- duration of training and sequence of implementation; and
- forms of assessment, evaluation and certification.

4.3.4 Training plan specification

A training plan specification should be established in order to negotiate with a potential training provider the provisions of specific training processes, e.g. delivery of specific training content.

A training plan specification is appropriate in order to establish a clear understanding of the organization's needs, the training requirements, and the training objectives that define what the trainees will be able to achieve as a result of the training.

Training objectives should be based on the expected competence developed in the specification for training needs in order to ensure the effective delivery of training and to create clear and open communication.

The specification should consider the following:

- a) the organization's objectives and requirements;
- b) specification for training needs;
- c) training objectives;
- d) trainees (target groups or target personnel);
- e) training methods and outline of content;
- f) schedule of requirements, such as duration, dates and significant milestones;
- g) resource requirements, such as training materials and staff;
- h) financial requirements;
- i) criteria and methods developed for the evaluation of training outcomes to measure the following:
 - satisfaction of the trainee,
 - trainee's acquisition of knowledge, skills and behaviours,
 - trainee's on-the-job performance,
 - satisfaction of the trainee's management,
 - impact on the trainee's organization, and
 - procedures for monitoring the training process (see clause 5).

4.3.5 Selecting a training provider

Any potential internal or external training provider should be subject to critical examination before being selected to provide the training. This examination may include the provider's written information (e.g. catalogues, leaflets) and evaluation reports. Examination should be based on the training plan specification and the identified constraints.

The selection should be recorded in an agreement or formal contract establishing ownership, roles and responsibilities for the training process.

4.4 Providing for the training

4.4.1 General

It is the responsibility of the training provider to carry out all the activities specified for the delivery of the training in the training plan specification.

However, as well as providing the resources necessary to secure the services of the training provider, the role of the organization in supporting and facilitating the training might include:

- supporting both the trainer and the trainee; and
- monitoring the quality of the training delivered.

NOTE A trainer is a person who applies a training method.

The organization may support the training provider in monitoring the provision of training (see clause 5).

The success of these activities is affected by the effectiveness of the interactions between the organization, the training provider and the trainee.

The purpose of the following subclauses is to provide guidance on how the organization might carry out these activities (see Table A.3).

4.4.2 Providing support

4.4.2.1 Pretraining support

Pretraining support may include such activities as:

- briefing the training provider with relevant information (see 4.2);
- briefing the trainee on the nature of the training and the competence gaps it is intended to close; and
- enabling contact to be made between the trainer and trainee.

4.4.2.2 Training support

Training support may include such activities as:

- providing relevant tools, equipment, documentation, software or accommodation to the trainee and/or trainer;
- providing relevant and adequate opportunities for the trainee to apply the competence being developed; and
- giving feedback on task performance as requested by the trainer and/or trainee.

4.4.2.3 End-of-training support

End-of-training support may include such activities as:

- receiving feedback information from the trainee;
- receiving feedback information from the trainer; and
- providing feedback information to managers and to the personnel involved in the training process.

4.5 Evaluating training outcomes

4.5.1 General

The purpose of the evaluation is to confirm that both organizational and training objectives have been met, i.e. training has been effective.

The inputs for the evaluation of training outcomes are the specifications for training needs and for the training plan, and the records from the delivery of training.

The results of training often cannot be fully analysed and validated until the trainee can be observed and tested on the job.

Within a specified time period after the trainee has completed the training, the management of the organization should ensure that an evaluation takes place to verify the level of competence achieved.

Evaluations should be carried out on both a short-term and long-term basis:

- in the short term, trainee feedback information should be obtained on the training methods, resources used, and knowledge and skills gained as a result of the training; and
- in the long term, trainee job performance and productivity improvement should be assessed.

The evaluation should be conducted on the basis of established criteria (see 4.3.4).

The evaluation process should include the collection of data and the preparation of an evaluation report which also provides an input to the monitoring process (see Table A.4).

4.5.2 Collecting data and preparing an evaluation report

An evaluation report might include the following:

- specification for training needs;
- evaluation criteria and description of sources, methods and schedule for evaluation;
- analysis of data collected and interpretation of the results;
- review of training costs; and
- conclusions and recommendations for improvement.

The occurrence of nonconformities may require procedures for corrective action.

The completion of training should be documented in the training records.

5 Monitoring and improving the training process

5.1 General

The main purpose of monitoring is to ensure that the training process, as part of the organization's quality system, is being managed and implemented as required so as to provide objective evidence that the process is effective in meeting the organization's training requirements. Monitoring involves reviewing the entire training process at each of the four stages (see Figure 2).

Monitoring should be conducted by competent personnel in accordance with the organization's documented procedures. Where possible, such personnel should be independent of the functions in which they are directly involved. Methods for monitoring might include: consultation, observation, and data collection. Methods should have been decided during the training plan specification stage (see 4.3.4).

Monitoring is a valuable tool for enhancing the effectiveness of the training process (see Table A.5).

5.2 Validation of the training process

Inputs for monitoring might include all the records from all stages in the training process. Based on these records, a review of the different stages can be performed to detect nonconformity issues for corrective and preventive actions. Such inputs can be collected on an on-going basis to provide the basis of validating the training process, and for making recommendations for improvement.

If the procedures are followed and the specified requirements met, then the personnel competence records should be up-dated to reflect this additional qualification.

If the procedures are not followed and the requirements are met, then the procedures should be revised and the personnel competence records should be up-dated to reflect this additional qualification.

If the procedures are followed and the requirements not met, then corrective action may be needed to improve the training process or develop an appropriate non-training solution.

Overall, the review of the training process should identify any further opportunities for improving the effectiveness of any stage of the training process.

Appropriate records should be maintained of the various monitoring and evaluation activities conducted, the results obtained, and the actions planned.

Annex A (informative)

Tables

Table A.1 — Defining training needs (4.2)

Inputs	Process	Outputs	Record
Defining organization's needs (4.2.2)			
Quality policy Training policy Quality management requirements Resources management Process design	Consider all inputs when initiating training	Decision to initiate training process	Decision to initiate training process
Defining and analysing competence requirements (4.2.3)			
Organizational or technological change that affects work processes or impacts on the nature of products supplied by the organization Data recorded from past or current training processes Organization's appraisal of the competence of the personnel to perform specified tasks Turnover or seasonal fluctuation records involving temporary personnel Internal or external certification needed for the performance of specific tasks Requests from employees identifying opportunities for personal development contributes to organization's objectives Result of process reviews and corrective actions due to customer complaints or nonconformities reports Legislation, regulations, standards, and directives affecting the organization, its activities and resources Market research identifying or anticipating new customer requirements	Document competence requirements	Competence requirements	List of competence requirements
Reviewing competence (4.2.4)			
Competence records Data on task requirements and task performance from: — interviews/questionnaire with employees, supervisors, managers — observations — group discussion — input from subject matter experts	Review existing competence	Knowledge of existing competence	List of existing competence

Table A.1 (continued)

Inputs	Process	Outputs	Record
Defining competence gaps (4.2.5)			
List of required competence and list of existing competence	Define competence gaps	Knowledge of competence gaps	List of competence gaps
Identifying solutions to close the competence gaps (4.2.6)			
List of competence gaps	Identify and select training as a solution	Training selected as a solution	Training selected as a solution
Defining the specification for training needs (4.2.7)			
List of competence requirements; List of competence gaps Results of previous training Requests for corrective action	Document training objectives and expected training outcomes	Training needs specification	Training needs specification document