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Information technology — Quality for learning, education and training — Fundamentals and reference framework

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, SC 36, *Information technology for learning, education and training*.

ISO/IEC 40180 cancels and replaces ISO/IEC 19796-1:2005 (initially published under the general title *Information technology — Learning, education and training — Quality management, assurance and metrics*) which has been technically revised.

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Introduction

This document provides the fundamentals and the reference framework for quality assurance, quality management and quality improvement in IT-enhanced learning, education and training (called E-Learning). This document primarily consists of the Quality Reference Framework (QRF) for E-Learning. It is a framework to describe, compare and analyse approaches for quality management and quality assurance. These approaches can be mapped to QRF. Therefore, the framework is not a quality management model or guiding management system – it is a framework for the description of quality approaches. It serves to compare different existing standards and to harmonize these towards a common quality model. For a better understanding of the QRF, several annexes show samples of its usage – the annexes are based on the German DIN PAS 1032-1 (Annex B), the French code of practice in E-Learning (Annex C); and an example of how it can be mapped to other quality systems, such as the Chinese E-Learning Technology Standards(CELTS) (Annex D).

This document provides the fundamentals for the implementation and adaptation of the general quality standards within the fields of E-Learning, education and training. This includes specific vocabulary as well as the Quality Reference Framework (QRF) with its Process Model and Descriptive Model. It provides sector specific information that may be used to support the better integration of mandatory and voluntary quality approaches at the local, regional, national and transnational levels. Through the application of this document, organizations may continue to improve the quality of their processes, products, services and solutions within the fields of learning, education and training.

This document was carefully developed and revised over a period of more than 10 years to ensure compatibility with ISO 9001 and ISO 14001 standards and facilitate their use by organizations that wish to introduce and improve quality assurance, quality management and quality improvement in learning, education and training together with the implementation of both environmental and quality management systems to benefit themselves and their customers and stakeholders.

Overview of ISO/IEC 40180:

— Clause 6 describes the process-oriented Quality Reference Framework (QRF) for the comparison and analysis of quality approaches.

— Annex A (informative) provides an introduction and description of the QRF and illustrates its relation to the PDCA Cycle and the IDEAL Reference Model. It further provides answers on key questions in order to provide a clearer understanding of the QRF concept and its use."

— Annex B (informative) shows the full German process model (DIN PAS 1032-1) as an example of how the basic model can be extended.

— Annex C (informative) describes the use of the model describing the "French Code of Practice in E-Learning" (AFNOR Z 76-001) as a second sample of the use of this document.

— Annex D (informative) describes how other quality approaches can be mapped to QRF. Specifically, the Chinese Model CELTSC is used as an example of the mapping procedure.

— Annex E (informative) describes the use of the model for specific quality objectives such as metadata quality.

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Information technology — Quality for learning, education and training — Fundamentals and reference framework

1 Scope

This document provides the fundamentals and the reference framework for quality assurance, quality management and quality improvement in IT-enhanced learning, education and training (called E-Learning). It consists mainly of the Quality Reference Framework (QRF) for E-Learning, which is a common and generic framework to describe, specify and understand critical properties, characteristics and metrics of quality. The QRF combines an elaborated and extensive process model with a descriptive model for the processes. This document harmonizes existing approaches, concepts, specifications, terms and definitions related to quality for E-Learning, education and training.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

[SOURCE: ISO 9000:2015, 3.2.1]

3.2
customer
person or organization who consumes the product (studying and training) directly or indirectly

EXAMPLE Learner, learner's parents, education institutions and potential employer.

3.3
interested party
person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity of ITLET

EXAMPLE Learner, employee, provider, partner, investor, owner, society.

[SOURCE: ISO 9000:2015, 3.2.3, modified, adapted within ITLET context]

3.4
process
set of interrelated or interacting activities which transforms inputs into outputs

Note 1 to entry: Inputs to a process are generally outputs of other processes.

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Note 2 to entry: Processes in an organization are generally planned and carried out under controlled conditions to add value.

Note 3 to entry: A process where the conformity of the resulting product cannot be readily or economically verified is frequently referred to as a "special process".

3.5
product
output of an organization that can be produced without any transaction taking place between the organization and the customer

Note 1 to entry: Production of a product is achieved without any transaction necessarily taking place between provider and customer, but can often involve this service (3.6) element upon its delivery to the customer.

Note 2 to entry: The dominant element of a product is that it is generally tangible.

Note 3 to entry: Hardware is tangible and its amount is a countable characteristic (e.g. tyres). Processed materials are tangible and their amount is a continuous characteristic (e.g. fuel and soft drinks). Hardware and processed materials are often referred to as goods. Software consists of information regardless of delivery medium (e.g. computer programme, mobile phone app, instruction manual, dictionary content, musical composition copyright, driver's licence).

[SOURCE: ISO 9000:2015, 3.7.6]

3.6
service
output of an organization with at least one activity necessarily performed between the organization and the customer

Note 1 to entry: The dominant elements of a service are generally intangible.

Note 2 to entry: Service often involves activities at the interface with the customer to establish customer requirements as well as upon delivery of the service and can involve a continuing relationship such as banks, accountancies or public organizations, e.g. schools or hospitals.

Note 3 to entry: Provision of a service can involve, for example, the following: — an activity performed on a customer-supplied tangible product (e.g. a car to be repaired); — an activity performed on a customer-supplied intangible product (e.g. the income statement needed to prepare a tax return); — the delivery of an intangible product (e.g. the delivery of information in the context of knowledge transmission); — the creation of ambience for the customer (e.g. in hotels and restaurants);

Note 4 to entry: A service is generally experienced by the customer.

[SOURCE: ISO 9001:2015, 3.7.7]

3.7
quality
degree to which a set of inherent characteristics of an object fulfils requirements

Note 1 to entry: The term "quality" can be used with adjectives such as poor, good or excellent.

Note 2 to entry: "Inherent", as opposed to "assigned", means existing in an object.

[SOURCE: ISO 9001:2015, 3.6.2, modified]

3.8
data quality
set of features that concern the collection, analysis, persistence, dissemination, and usage of data

EXAMPLE Relevance, accuracy, timeliness, punctuality, accessibility, clarity, comparability, coherence.

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3.9
quality assessment
measures carried out consistently and systematically in order to insure conformity with the requirements of a defined specification

3.10
quality assurance
part of quality management focused on providing confidence that quality requirements will be fulfilled

[SOURCE: ISO 9000:2015, 3.3.6]

3.11
quality control
part of quality management focused on fulfilling quality requirements

[SOURCE: ISO 9000:2015, 3.3.7]

3.12
quality improvement
part of quality management focused on increasing the ability to fulfil quality requirements

Note 1 to entry: The quality requirements can be related to any aspect such as effectiveness, efficiency or traceability.

[SOURCE: ISO 9000:2015, 3.3.8]

3.13
quality management
management with regard to quality

Note 1 to entry: Quality management can include establishing quality policies and quality objectives , and processes to achieve these quality objectives through quality planning, quality assurance , quality control , and quality improvement.

Note 2 to entry: [SOURCE ISO 9000:2015, 3.3.4]

3.14
quality objective
objective related to quality

Note 1 to entry: Quality objectives are generally based on the organization's quality policy.

Note 2 to entry: Quality objectives are generally specified for relevant functions, levels and processes in the organization

Note 3 to entry: [SOURCE ISO 9000:2015, 3.7.2]

3.15
quality planning
part of quality management focused on setting quality objectives and specifying necessary operational processes and related resources to achieve the quality objectives

Note 1 to entry: Establishing quality plans can be part of quality planning.

[SOURCE: ISO 9000:2015, 3.3.5]

3.16
quality policy
policy related to quality

Note 1 to entry: Generally the quality policy is consistent with the overall policy of the organization, can be aligned with the organization’s vision and mission and provides a framework for the setting of quality objectives.

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Note 2 to entry: Quality management principles presented in this International Standard can form a basis for the establishment of a quality policy.

[SOURCE: ISO 9000:2015, 3.5.9]

3.17
total quality management
management approach of an organization, centred on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society

4 Abbreviated terms

QRF	Quality Reference Framework
RQC	Reference Quality Criteria
SCORM	Sharable Content Object Reference Model
W3C	World Wide Web Consortium
IDEAL	Initiating, Diagnosing, Establishing, Acting and Learning model
PDCA	Plan-Do-Check-Act cycle

5 Conformance

A quality description conforms to this document if each process included in a QRF instance corresponds to the appropriate specification in this document and includes all sub-processes. A conforming description may contain descriptions of processes not included in this document. The description may contain additional data elements.

This document can assist users who are implementing ISO 9000, ISO 9001 and can be used with other ISO quality standards, such as ISO 14001.

This document is informed by the concept and philosophy of Total Quality Management and by ISO 9000 and ISO 9001. However, it is not a Management System Standard and does not provide a model to follow when setting up and operating a quality management system like ISO 9001. Instead, it provides guidance and support for the introduction of quality management and improving learning quality.

This document is informed by the concept and philosophy of Environmental Management and by ISO 14001. However, it is not an Environmental Management System Standard and does not provide a model to follow when setting up and operating an environmental management system like ISO 14001. Instead, it provides guidance and support for introducing and improving quality processes in learning, education and training.

6 The Quality Reference Framework (QRF) for E-Learning

6.1 General

The QRF provides a process model and a descriptive model for the description, comparison and analysis of process-oriented quality approaches. The QRF can be used as a meta-model for approaches of quality management and quality assurance in learning, education and training. This means that no assumptions and prescriptive requirements of the quality approaches are made.

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