

The Quality Adaptation Model (QAM): adaptation and adoption of the quality standard ISO/IEC 19796-1 for learning, education and training

Jan M. Pawlowski, Institute for Computer Science and Business Info Systems, University of Duisburg-Essen, Essen, Germany

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ABSTRACT. In 2005, the new quality standard for learning, education and training, ISO/IEC 19796-1, was published. Its purpose is to help educational organizations develop quality systems, and improve the quality of their processes, products and services. In this article, the standard is presented, and compared to existing approaches, showing the methodology, and its advantages for educational organizations. However, since the standard is a reference model, it has to be adapted to the needs and requirements of an organization. Hence, the main aspect is the adoption and implementation process: how can ISO/IEC 19796-1 successfully be implemented in educational organizations, and support the variety of involved actors? To answer this question, the quality adaptation model identifies steps and instruments to bring the abstract standard into practice. The article closes with a case study, evaluating the use and adequacy of the model.

KEYWORDS: *ISO/IEC 19796-1, Quality management for learning, education and training, Quality standard, Reference process model*

Introduction

This article shows how to use and adapt the new quality standard for learning, education and training, ISO/IEC 19796-1 (ISO/IEC, 2005), to improve the quality of processes, products and services of an educational organization. The main objective is to show how actors in educational organizations can use this standard, and organize the adoption process.

Generally, quality is an issue of increasing importance in educational organizations (Ehlers et al., 2005). However, there are currently no commonly accepted approaches (Kefalas et al., 2003). Therefore, many obstacles to implement and achieve quality can be found in practice. First of all, organizations have to choose an adequate approach from the variety of existing approaches to meet their

needs and requirements. Secondly, successful implementation depends on overcoming typical barriers (Masters, 1996). The new quality standard ISO/IEC 19796-1 was developed to overcome those problems. However, implementing a standard in an educational organization is a complex task, requiring competences, commitment and resources.

This article starts with a discussion on the state of e-learning quality. The standard ISO/IEC 19796-1 is described and analyzed, with regard to its suitability for educational organizations. One main concern is the adaptation of an abstract standard to meet the needs and requirements of the users. For this purpose, we present the Quality Adaptation Model (QAM), a concept for the adaptation, implementation and use of this standard in educational organizations. The concept was analyzed and evaluated in different cases (CEN/ISSS, 2006b).

Quality approaches and standards for learning, education and training

Quality in the field of learning, education and training, and specifically e-learning, has become an issue of increasing importance, in both researchers' and practitioners' communities. A variety of approaches has been developed and implemented in different sectors, such as higher education (Cruickshank, 2003), schools (Greenwood, Gaunt, 1994), in the e-learning sector (Barron et al., 2003), or the service industry in general (Yasin et al., 2004; Douglas, Fredendall, 2004). All approaches differ in various aspects, such as scope or methodology.

There is no common understanding about the terminology or the methodology of quality, because quality can be seen from a variety of perspectives and dimensions. Ehlers states that quality is a multi-perspective construct (Ehlers, 2004). The main perspective is the terminology and the corresponding understanding of quality. The term "quality" is not defined and interpreted as common sense. A widely used definition by Juran is "fitness for purpose" (Juran, 1951, 1992). Moreover, the International Organization for Standardization defines quality within the standard ISO 9000:2000 as the "ability of a set of inherent characteristics of a product, system or process to fulfil requirements of customers, and other interested parties" (ISO, 2000). However, these definitions are far too generic to be applied in the field of e-learning. The specific requirements of

e-learning environments, such as incorporating the complex roles in the educational process, are not taken into account.

From a second perspective, quality also depends on the scope and objectives. Various concepts have been developed for generic purposes, such as TQM that is Total Quality Management (Deming, 1982). Total Quality Management or TQM has also been applied to specific sectors and scopes, for example, information systems management (Cortada, 1995; Ravichandran, 2000), software development (Rai et al., 1998; Gill, 2005), or higher education management (Cruickshank, 2003). Additionally, several concepts have been developed for highly specific purposes, such as metrics for data quality (Pipino et al., 2002) or learners' and teachers' performance (Shaha et al., 2004).

The last perspective deals with the focus and methodology of the quality approach. Benigno and colleagues give a rough distinction of the subject of quality assurance: processes, products and competences (Benigno et al., 2001). Another distinction is the methodology distinguishing the type of quality approach, such as quality management, quality assurance, benchmarking, accreditation, or criteria catalogues (CEN/ISSS, 2006a).

As a conclusion of this exemplary review on varying perspectives of quality, I define "quality" in the following as "appropriately meeting the stakeholders' objectives and needs, which are the result of a transparent, participatory negotiation process, within an organization". Moreover, in the field of e-learning, quality is related to all processes, products and services for learning, education and training, supported by the use of information and communication technologies.

Correspondingly, the definition of quality should be based on various attributes, reflecting the above-mentioned different perspectives. To describe quality approaches in depth, the following attributes help distinguish quality concepts:

- **Context and scope.** Intended context of the approach (for example, schools, higher education, vocational training). Which processes are covered (e.g., design, development, realization)?
- **Objectives.** What are the quality objectives that can be achieved by an approach? (Some examples are cost reduction, process consistency, learner satisfaction, and product reliability).

- **Focus.** Does the quality approach focus on 1) organizations/ processes, 2) products/services, or 3) competences?
- **Perspective.** For which stakeholders and, correspondingly, from which perspective was a quality approach designed (developers, administrators, learners)?
- **Methodology.** Which methods and instruments are used (benchmarking, criteria catalogue, guidelines, information provision)?
- **Metrics.** Applied indicators and criteria to measure the success (some examples are drop-out rate, return on investment, learner satisfaction).

The main problem for organizations is finding an adequate quality concept that meets their requirements and needs (CEN/ISSS, 2006a), with regard to the above-mentioned attributes. In principle, two general directions can be identified in the field of quality approaches for learning, education and training. *Generic approaches* are not limited to one domain (such as educational organization or e-learning providers): they are adapted to the specific requirements in the domain. *Specific approaches* are quality approaches that deal with certain aspects of the domain of learning, education and training, specifically e-learning.

Generic approaches, such as ISO 9000 (ISO, 2000) or EFQM-European Foundation for Quality Management (EFQM, 2003) are widely used and well accepted in the field of quality management. However, the effort to adapt those approaches is very high. Usually an organization has no domain-specific guideline for providing descriptions of their educational processes. In spite of those difficulties, a variety of successful examples show that it is possible to use those standards in the context of learning, education and training, but that adapting these standards still requires a great deal of effort (Barron et al., 2003; Cruickshank, 2003). To avoid the large adaptation efforts, specific approaches for the field of learning, education and training have been developed. As already mentioned above, these approaches differ in scope and methodology, ranging from quality-management systems for education to content-development criteria or guidelines. Moreover, none of these approaches has a wide acceptance in Europe (Ehlers et al., 2005).

Finally, a variety exists of related approaches for a specific quality objective. These standards are used to assure quality for very specific aspects, such as data quality or interoperability. The following table summarizes the potential choices for educational organizations.

Table 1. Classification of quality approaches

Standards' type	Purpose	Examples
Generic quality approaches	Concepts for quality management or quality assurance, independent of the domain of usage	- ISO 9000:2000 (ISO, 2000) - EFQM - European Foundation for Quality Management (EFQM, 2003)
Specific quality approaches for learning, education and training	Quality management or quality assurance concepts for the field of learning, education and training	- BLA-British Learning Association Quality Mark (BLA, 2005) - QAA Framework (Consortium for Excellence in Higher Education, 2001) - Quality on the Line Benchmarks (Phipps et al., 2000) - ASTD-American Society for Training & Development Quality Criteria (ASTD, 2001)
Related approaches	Manage or assure specific aspects of quality. For example, learning technology standards are used to assure interoperability as a specific quality objective	- LOM-Learning Object Metadata (IEEE/LTSC, 2002) - Data Quality (Pipino et al., 2002; Pierce, 2004)

In general, all quality approaches - generic, specific and related approaches - can be helpful for educational organizations. However, several weaknesses exist. First of all, most standards and approaches are not comparable; only expert users are informed on scope and applicability for a certain context. Secondly, the adaptation efforts for generic standards are, in many cases, too high. Additionally, specific standards are usually not widely used, and not well known in the community. Hence, the objective of transparency cannot be achieved by those standards and approaches. These more theoretical findings were approved by a study that is presented in the next section.

Quality standards in practice

Quality standards should serve the needs of users and their organizations. To identify those needs, a study was performed, on the European level, in 2004 ($N = 1750$) (Ehlers et al., 2005). The study's main goal was to identify the situation in which quality approaches and standards were used, and to identify the needs of the different stakeholders. The study was aimed at educational organizations, such as content and service providers, higher education institutions, and e-learning users, using an online survey. Participation was on a voluntary basis. The study was not meant to be representative, because stakeholders already aware of the issue of quality were slightly over-represented. However, the study aimed at identifying general trends and needs, and the results indicate important trends and developments in this field.

First, quality strategies were analyzed. Only 26% of the survey participants use external approaches (such as ISO 9000 or BLA Quality Mark); 35% use approaches that have been individually developed in their organization. In 24% of the cases, quality is not part of the organizational strategy, and 15% of the participants have no strategy at all.

The results on the individual level indicate a similar trend: more than half of the users (58%) answered that they have been actively involved in quality projects. There was a drastic gap between providers and users: 70% of e-learning providers indicated that they have experience in quality projects, whereas 67% of customers and users indicated that they have no experience. Additionally, a more differentiated view shows that 77% of decision makers have been involved in quality-related activities, but on the operative level, 66% have no such experience at all. This means that quality is usually limited to the management level and that, in most cases, it is not implemented on the operational level. Since quality is not achieved by management only, this gap leads to the conclusion that strategies that involve all stakeholders must be found. Additionally, a "quality gap" was identified: this means that many organizations and individuals are aware of the importance of quality, but in practice, no activities are implemented either in their organization or for their individual job.

In summary, these results show that many stakeholders are aware that quality is important for their organization and their individual tasks. Currently, however, there are no adequate instruments to

fulfil the needs and requirements of organizations and individuals, so that they can easily adopt quality approaches in their organization. The main question is how to harmonize existing quality approaches, so that users do not need to choose between a variety of approaches. How can we develop a harmonized quality approach that takes into account the various existing practices? Therefore, we need to provide quality approaches specifically for educational organizations. To support those approaches, two factors seem to be of crucial importance: (1) tools for adaptation and adoption, and (2) instruments to ensure a broad level of participation.

The quality standard for learning, education and training ISO/IEC 19796-1

In the following section, I shall analyze whether and how an international quality standard can fulfil the needs and requirements of educational organizations. Furthermore, I shall explain the use of this standard.

The new standard ISO/IEC 19796-1 provides a Reference Framework for the Description of Quality Approaches, so called RFDQ (ISO/IEC, 2005). Such a reference framework represents the interrelationship of the aspects mentioned above, and gives an orientation as to which aspects should be covered, and how solutions for these aspects can be found. Thus, the RFDQ could be applied as roadmap to consecutively design and implement an adequate solution. The standard is an instrument to develop quality in the field of e-learning. It consists of three parts:

- a description scheme for quality approaches;
- a process model as a reference classification;
- reference criteria for evaluation.

The RFDQ supports the development of quality profiles for organizations (such as objectives, methods, relations, and people involved). Quality profiles mean that the generic standard is tailored to the needs and requirements of an organization. It does not provide specific requirements or rules. Rather, it is a framework to guide actors through the process of quality development in the field of e-learning.

The *description model* is merely a scheme to describe quality approaches (such as guidelines, design guides, or requirements).

It documents all quality concepts in a transparent way. It is based on the CEN/ISSS CWA 14644 (CEN/ISSS, 2003), which provides an analysis scheme for quality approaches. Each process can be described by the scheme in Table 2.

Attribute	Description	Example
ID	Unique identifier	IDI234
Category	Main process	Course development
Process name	Process name	Method selection
Description	Description of the process	“Within this process the didactic concept and methods are evaluated and selected”
Relations	Relation to other processes	“Before the method selection a target group analysis must be performed” (Process 1.6)
Sub-processes / Sub-aspects	Sub-processes/ Sub-aspects/Tasks	Method identification. Method alternatives. Method prioritization.
Objective	Objective of a process	Adequate selection of one or more didactic concepts according to learner preferences and learning styles.
Method	Methodology for this process	Method selection shall be based on the target group taking into account their competences and learning styles. Methods are selected based on the teachers' experience.
Result	Expected result of a process	Method specification. Documents.
Actors	Responsible/ Participating actors	Team didactical design. Project leader.
Metrics/ Criteria	Evaluation and metrics for this process	Criteria catalogue 3.2.2–3.2.6
Standards	Standards used	DIN EN ISO 9241, LOM - See Method Guidelines Handbook
Annotation/ Example	Further information and examples of usage	The methods used should be documented and listed in the didactical best-practice collection.

Table 2. Description model for quality approaches of ISO/IEC 19796-1 (ISO/IEC, 2005)

The description model serves only as a certain kind of information base, to provide a harmonized scheme to describe quality approaches.

The *process model* is a guide to the different processes for developing learning scenarios. The process model includes the relevant processes within the life cycle of information and communication technology systems for learning, education and training. The process model is divided in seven parts. Sub-processes are also included referencing to a classification of processes.

Table 3. Process model of ISO/IEC 19796-1

ID	Category	Description/Sub-processes
1	Needs analysis	Identification and description of requirements, demands and constraints of an educational project
		1.1 Initiation 1.2 Stakeholder identification 1.3 Definition of objectives 1.4 Demand analysis
2	Framework analysis	Identification of the framework and the context of an educational process
		2.1 Analysis of the external context 2.2 Analysis of staff resources 2.3 Analysis of target groups 2.4 Analysis of the institutional and organizational context 2.5 Time and budget planning 2.6 Environment analysis
3	Conception/Design	Conception and design of an educational process
		3.1 Learning objectives 3.2 Concept for contents 3.3 Didactical concept - methods 3.4 Roles and activities 3.5 Organizational concept 3.6 Technical concept 3.7 Concept for media and interaction design 3.8 Media concept 3.9 Communication concept 3.10 Concept for tests and evaluation 3.11 Concept for maintenance
4	Development/Production	Realization of concepts
		4.1 Content realization 4.2 Design realization 4.3 Media realization 4.4 Technical realization 4.5 Maintenance

5	Implementation	Description of the implementation of technological components
		5.1 Testing of learning resources 5.2 Adaptation of learning resources 5.3 Activation of learning resources 5.4 Organization of use 5.5 Technical infrastructure
6	Learning process	Realization and use of the learning process
		6.1 Administration 6.2 Activities 6.3 Review of competence levels
7	Evaluation/Optimization	Realization and use of the learning process
		7.1 Planning 7.2 Realization 7.3 Analysis 7.4 Optimization/Improvement

Finally, with regard to Table 2 and Table 3, ISO/IEC 19796-1 contains a list of reference criteria, for the assessment of the quality of learning products. The catalogue contains functional as well as media and learning psychology-related reference criteria. Furthermore, it includes criteria related to data security, and (specially marked) criteria related to national laws, in the area of distance learning.

An analysis of the standard should clarify whether its intended objectives are fulfilled, and the above-mentioned main concerns of quality practitioners are addressed. The main intent is harmonization: whereas many organizations have adapted general standards, such as ISO 9000:2000 or the EFMQ Excellence Model, there is no commonly accepted quality framework for the field of e-learning (Kefalas et al., 2003). Table 4 gives the main aspects of my analysis.

Generally, the ISO/IEC 19796-1 quality standard provides a harmonized approach to manage, assure, or assess quality. Furthermore, the existing variety of standards, quasi-standards, and related standards (see first section) can be modelled using ISO/IEC 19796-1. Therefore, the goal of harmonizing existing approaches is met. However, the harmonization has been done on an abstract level, with no recommendations or guidelines for quality management given. These guidelines have to be developed by the users themselves. Consequently, the ISO/IEC 19796-1 standard

is a basic model or roadmap for educational organizations, and has to be adapted to each organization's specific context. For this purpose, the quality adaptation model was developed.

Table 4. Analysis grid

Aspect	Result
Harmonization	ISO/IEC 19796-1 can be seen as a first step to harmonizing existing approaches. It provides a general process model for ICT-supported learning, education and training. The processes are specific to the domain. However, not all specific scenarios are covered, for, when a specific provider develops game-based learning, the processes have to be extended.
Completeness	The description model contains the main element of process modelling, upon which all kinds of processes can be modelled. As a weakness, there are no pre-defined relations sequencing the processes.
Methodology	The standard is a meta-model that incorporates other standards and approaches. It is not clear from the document itself whether or not the standard needs to be extended and adapted.
Support of stakeholders	The model might support stakeholders who want to define their processes in a structured way. However, the standard does not contain detailed guidelines for how to use the model. Therefore, application scenarios showing the model's practical use should be developed.
Flexibility	The standard provides a basic adaptable and extensible framework. Processes can be extended. Since the standard does not contain a conformance statement, each extension would relate to the harmonization aspect. Therefore, the building of profiles by communities of practice can be recommended.
Consistency with other standards	The model includes the main aspects that are covered in other process-oriented standards (see first section). It can be used as a blueprint for processes that can then be used in a generic standard, such as ISO 9000.

Adaptation and adoption of ISO/IEC 19796-1: the Quality Adaptation Model (QAM)

Below, the Quality Adaptation Model (QAM) is presented. It consists of different phases and steps to bring quality approaches, specifically ISO/IEC 19796-1, into practice.

The standard itself is a reference model that can be applied in different scenarios. To illustrate the potential use, I will first present three corresponding application scenarios. Secondly, the reference model has to be adapted by launching activities to adopt the standard in an organization. This should lead to an organization-specific model, that contains the adapted processes, but also specific measures, to establish a quality culture in an organization. Figure 1 summarizes the relationship of the models.

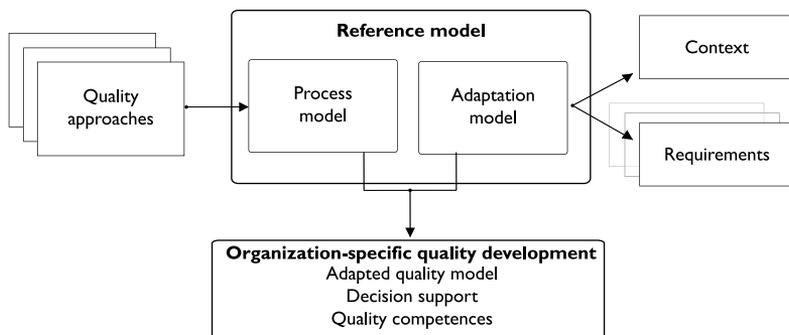


Figure 1. Relations of the models

Application scenarios

There are several application scenarios in which to use the standard. The main application scenario is the organization-specific development of quality systems. The main objective of ISO/IEC 19796-1 is to provide a transparent description model, to clearly describe and document quality management and quality assurance approaches. The description model provides processes to develop e-learning scenarios by specifying:

- quality objectives;
- methods to ensure the quality;
- actors involved in this process;

- relations to other processes;
- evaluation methods to assess the success of a process;
- standards and references.

Using the quality adaptation model, individual quality approaches can be designed, including aspects of approaches that apply to the context of usage. The adaptation process is described in detail in the next section.

As shown above, there is a variety of existing approaches that can be used for different objectives and purposes. Combining quality approaches is the second application scenario. The model provides clear terminology and description formats, to assemble individual quality concepts from existing approaches. As an example, the management guideline principles of Total Quality Management (TQM) could be combined with specific content guidelines. By using the common terminology of ISO/IEC 19796-1, approaches can be combined and re-used in various (new) combinations. The third application scenario is using the process model as a guideline. The second part of the ISO/IEC 19796-1 standard is a reference model containing all processes of the e-learning life cycle. It can be used as a guideline to develop quality concepts from the initial idea (“I would like to make my seminars more flexible”) through to optimization and improvement. Therefore, ISO/IEC 19796-1 can be used to support quality development, for all actors. The last scenario is using the evaluation field as a reference source. Typically, evaluations are not comparable, because they do not use a common, consistent set of criteria. This is provided by the reference criteria as a reference source for evaluation criteria. Many organizations need to develop evaluation criteria for their education and training programs. ISO/IEC 19796-1 provides a collection of criteria, to be used in evaluations, for different purposes. Additionally, evaluations of products are more transparent and comparable, because they relate to a standardized set of criteria. The most important purpose is to support and develop quality in organizations. The next section shows how to implement quality development using ISO/IEC 19796-1.

The Quality Adaptation Model (QAM)

Adaptation in this context means that the reference model can only serve as a guideline upon which aspects should be based. Additionally, the model suggests steps to overcome the main barriers of quality management, such as the lack of management commitment, inadequate knowledge or understanding of TQM (Total Quality Management), the inability to change organizational culture, or the inadequate use of empowerment and teamwork (Masters, 1996).

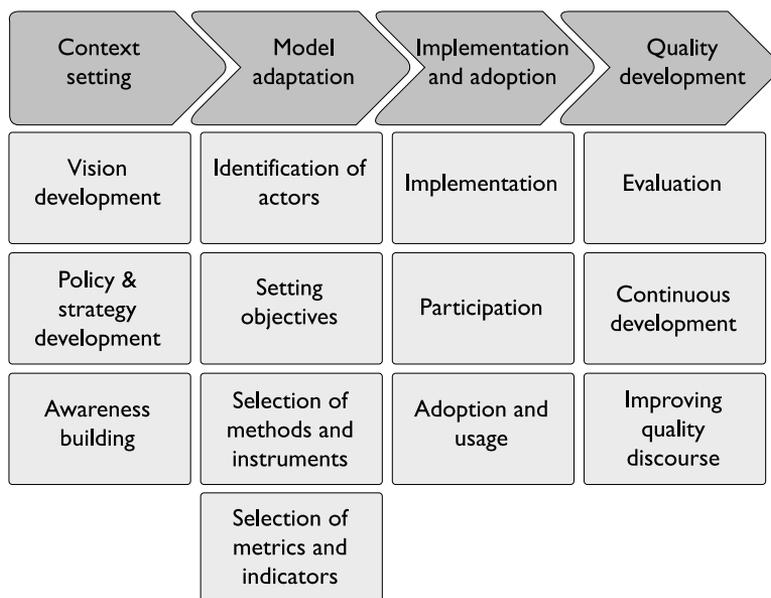


Figure 2. Phases of the Quality Adaptation Model (QAM)

The Quality Adaptation Model (QAM) follows a four-step process. These steps are not performed iteratively, but are individually scheduled. Context setting covers all preparatory activities for the adaptation process. Model adaptation contains activities to implement the reference model, based on the needs and requirements of an organization. Model implementation and adoption refers to the realization and the broad use of the quality system. Quality development means that quality systems should be continuously improved and further developed. These phases contain several activities, which are explained in the following paragraphs.

Context setting: providing the basis for quality development

This phase sets the context for quality development. It ensures that quality development is anchored and present in all parts of an organization.

An organization's long-term objectives, externally and internally, are contained in its vision, strategy and policy statements. If an organization is committed to quality development, it should be mentioned in these statements. In most organizations, quality - and specifically, quality of e-learning - is not adequately represented. Therefore, the process to improve vision, strategies and policies needs to be established (see Ittner, Larker, 1997).

The redefinition should not be only a management's responsibility. The process, which actively sets new directions for an organization, should be at least transparent to all staff members, and include participants from all staff groups. As an example, the strategy/policy should explain how the quality of e-learning relates to the organization's core competences, and how it influences the main operations. Directly related is the process of awareness raising. Quality development will not be successful, if it is a top-down regulation. Quality development should be a part of everyday operations, and related to all activities. Therefore, all members of an organization should be aware of quality and its meaning for their personal actions. The outcome of this phase should include revised vision, strategy, and policy documents, that show the organization's long-term view of quality, and the consequences for all parts of the organization. All staff groups should be aware of, and involved in, this process.

Model adaptation: individualizing ISO/IEC 19796-1

To establish the details of quality development in an educational organization, the reference model ISO/IEC 19796-1 can be used as a guideline.

First of all, the relevant actors for quality development should be identified. It is useful to involve actors of all departments, and all staff groups in this process. Actors, acting as multipliers for their groups, should be involved. They should be fully committed to supporting the quality development process. The outcome of this phase is a list of actors responsible for quality. Usually, this also leads to changed job descriptions, and agreements with these actors.

Secondly, the processes relevant for an organization should be identified. For example, for producers of learning media, only some

sub-categories (such as design and production) might be relevant. As another example, for tutors, only the learning processes would be relevant. Additionally, processes specific to an organization should be added. The outcome of this phase is a comprehensive list of processes for the organization.

The main step of adaptation is setting quality objectives for each process. Quality objective means that each process should define how quality results can be achieved (e.g., “technical concept: the objective is to develop a clear, unambiguous specification of technologies that meet the users’ needs and preferences”). The quality objectives for each process cannot be defined by just one individual: they are subject to a negotiation process, and should be agreed upon, in consensus with the relevant actors.

Based on the objectives, instruments and methods should be identified and selected. In this context, these are concrete activities to achieve, assure or assess quality for the given objectives. Examples of those instruments are benchmarking, assessments, or simply the use of questionnaires. Instruments to achieve the quality objective “24-hour availability of the support hotline” could be an assessment of the call centre’s staff, test calls, or technical monitoring. The selection of adequate instruments is crucial for the success of a quality system: these instruments need to be adequate for the quality objective, the effort should be small, and they should be well accepted by the participants. Therefore, it is useful to inform and train staff members, in the use and interpretation of these instruments.

As an alternative, existing quality models can be incorporated into the reference model. As shown in the second application scenario, in the section above, existing quality models (such as guidelines) should be analyzed. The analysis consists of defining, prioritizing and selecting matching attributes, such as the context, objectives covered and methodology (for a sample procedure of this selection process, and the recommendation mechanism, see CEN/ISSS, 2006a; Manouselis, Sampson, 2004). By re-using existing approaches, the adaptation effort is decreased. However, this is still a future scenario, since not all providers of quality approaches use the description scheme of ISO/IEC 19796-1. Once this is achieved as a standard procedure, this re-use would enable the easy selection and incorporation of existing models.

Finally, usually connected to the choice of instruments and methods,

metrics and indicators are chosen, to assess and measure the success. Metrics should reflect the success of achieving a quality objective (for a survey on possible metrics see Hirata, 2006; Lytras et al., 2001). Typical metrics are, for example, drop-out rates, and return on investment/education. These metrics need to be developed for each quality objective, and must be evaluated continuously. In any case, there should also be a procedure on how to interpret metrics, and which actions to take, based on the interpretation.

The outcome of this phase is an organization's process model that includes: quality objectives, responsible actors, methods/instruments, and metrics/indicators. By this description, the organization's actions to achieve quality are transparent, explicit, understandable and repeatable. An example of a full process description is given in Table 5.

Table 5. Sample process description

ID	Category	Process	Description	Relation
2.2	Framework analysis	Analysis of staff resources	Identification and description of actors, their qualifications and competences, and availability	
Sub-processes/ Sub-aspects		<ul style="list-style-type: none"> • Roles/functions. • Competences/formal qualifications. • Availability of actors. 		
Objective		To clearly identify, and correctly assess the roles/functions, competences/qualifications, gaps, and availability of actors and users who will be involved in top management courses.		
Method		Methods of empirical social/educational research (e.g., document analysis); consultation of specialists; staff profile analysis.		
Result		<ul style="list-style-type: none"> • Description of roles functions of staff. • Description of competences/formal qualifications of staff. • Description of availability of staff. 		
Actors		Project manager; HR experts, learners.		
Metrics/Criteria		Categories 2, 3, 4 of reference quality criteria.		
Standards		Project management and documentation guidelines; standards for social research.		

Model implementation and adoption: making the concepts work

In the initial adaptation process, usually only small groups of actors are involved. Therefore, an implementation strategy should be developed. This strategy should describe actions and activities that the quality system uses.

Furthermore, it is of vital importance that all actors are aware and involved (see Thiagarajan, Zairi, 1997). This does not mean that all staff members should know the full quality system, but they should be aware of quality objectives, for core and related processes that they are involved in. To establish participation, there should be opportunities for actors to influence, change and improve quality objectives and methods. Usually, the first implementation is done in representative test groups. Therefore, further users need to be involved and become familiar with the quality concepts, to systematically broaden the use of the quality system. The outcome of this phase should be an implementation plan, that includes activities to broadly adapt the model.

Quality development: improving the organization's performance

A quality system must be continuously evaluated, updated and improved, to be aligned to new developments, in an educational organization. Therefore, the following steps are necessary. The quality system should be evaluated, at least, twice a year. Specifically, it should be evaluated if the quality system has led to overall improvements, in the organization's performance. Furthermore, the adequacy of methods, instruments and metrics need to be evaluated. Based on this evaluation, improvement actions should be taken, such as the change and refinement of the system's components. Again, for this phase, broad commitment and participation are necessary, to reflect the staff's opinions and attitudes toward the system. This should lead to a broad awareness and discussion on quality.

The outcome of this phase is an evaluation strategy, improvement concepts, and, most important, a broad discourse on quality. Specifically, in the field of education, this will lead to a participatory process, designing and developing learning scenarios.

The Quality Adaptation Model (QAM) in practice

To analyze the use and effects of the model in different cases, a study on the success factors of quality implementation projects was performed in European educational organizations, within the European Standardization Body CEN/ISSS (respectively, Comité Européen de Normalisation/Information Society Standardization System), coordinated by the author (CEN/ISSS, 2006b). The case study method was used to: a) analyze the appropriateness in different contexts; and b) to observe potential improvements of the model. Case studies were used, as the evaluation method, to receive qualitative feedback from practical applications, covering a wide range of different contexts (from small content providers to larger higher education institutions). Therefore, it is necessary to include this range in the analysis. In the analysis, 15 educational organizations provided their input (CEN/ISSS, 2006b). In an initial competition, case studies were selected, based on their performance and ability, to show that their project was successful. The participating institutions reported on the adaptation process, and identified success and failure factors. These factors were compared to the Quality Adaptation Model (QAM), and identified, based on whether the phases of the model covered the main aspects of quality implementations. Specifically, the study focused on the results of the quality implementations, and their success factors. For each QAM phase, the main success and failure factors were analyzed. Table 6 indicates the results of the study, focusing on success factors for each phase. Additionally, the above-mentioned main barriers of Quality Management (Masters, 1996) were also found in the analysis. However, since the Quality Adaptation Model addresses these obstacles by providing guidance to the users, concrete steps to overcome those aspects were identified and implemented. Table 6 then shows the aspects and steps that were critical for the stakeholders.

Phase	Success factors
Context setting	
Vision development	<ul style="list-style-type: none"> • Quality should be integrated into the corporation's vision, to express commitment, internally and externally. • A clear vision will increase consumer confidence. • Strategies should be built, not on assumptions, but on verified concepts. • A quality vision can stimulate the management to continuously improve quality. • A quality vision should contribute to innovation and competitive value. • The vision should be clearly communicated. • The vision should reflect the culture of the organization.
Policy and strategy	<ul style="list-style-type: none"> • Policy should incorporate quality. • The policy should clarify procedures and responsibilities. • Quality projects should be given strategic priority. • Quality should be seen as a support for the innovation process. • Quality strategies should take external effects into account, such as trends, legislation and developments within the society.
Awareness raising	<ul style="list-style-type: none"> • Communication is crucial from the very beginning of the quality project. • External experts should be involved to improve the credibility of the project. • The main stakeholder should be the customer. • Different methods, such as lobbying, workshops, conferences, publications and tutorships, can support awareness building. • Quality should be related to the culture, way of thinking and value systems of both the organization and the individual. • Communication through protocols/minutes/reports provides steady, continuous collection of information. • Specifically, the objectives of quality should be shared among staff. • Online training on quality and process approach should be provided. • Make people aware of their responsibility and benefits.

Table 6. Success factors within the Quality Adaptation Model (QAM)

Model adaptation	
Setting objectives	<ul style="list-style-type: none"> • Quality objectives should be clearly defined. • As a first step, success factors for quality should be cooperatively defined. • The objectives should be negotiated, consumer-oriented, consensus-based and inclusive of all e-learning elements, and should take into account views from inside and outside the organization. • Tools should be provided to decrease the manager's workload. • Quality should be defined for all user groups. • Objectives should be defined according to principles: best quality for clients, reduction of development time, increased profitability.
Identifying actors	<ul style="list-style-type: none"> • Key persons should be identified first. • Sufficient time should be allocated to the key persons. • Prototype groups (test users) should be the first to implement quality assurance. • Students or learners should play a main role in the quality process. • Operational groups and users should be involved in validation and steering committees. • Quality experts should support each group. • Collaboration tools (e.g., shared workspace) should be provided to support users. • Procedures to manage complaints should be in place. • Voluntary basis is not a strong enough motivation, people should be formally committed.
Choosing methods	<ul style="list-style-type: none"> • For each process, a quality assurance tool and a procedure should be defined. • Prototyping can be used as a supporting method for Quality Assurance (QA) for content providers. • Methods are not limited to classical QA methods, but should take into account other methods, such as marketing or controlling instruments. • Experts should provide adequate, validated methods.

Choosing indicators	<ul style="list-style-type: none"> • The main indicator should be customer satisfaction; for all quality activities, cost/effort can be seen as main indicators. • It is necessary to achieve the agreement of team members, on every production measure. • Acceptance tests and benchmarking are useful for process as well as product measurement. • Data obtained from the field are essential, because they allow reliance on facts, and not on speculation. • Use, rather than merely store, the data obtained. • Quality should also be measured by people outside of the company.
Model implementation and adoption	
Implementation	<ul style="list-style-type: none"> • The main aspects of implementation are steering, communication and commitment. • Guidance, help and feedback should be provided throughout the project. • Goodwill and vision are not sufficient to change people's mind; awareness building is crucial to reach organizational changes. • ICT tools should support management (measures and indicators). • Clear requirements, and resulting tasks and responsibilities for QA should be defined. • Connect experts with non-experts - for example, QA-responsible person, management, technical people - for implementation/development of tools. • Allowance of time for specific QA activities. • Benefits should be made clear, at each stage. • Training should be started, before the quality project, to create quality knowledge for the staff. • Key factors of success are motivation, simplicity and readability of processes, and management involvement.
Establishing participation	<ul style="list-style-type: none"> • All actors are kept informed throughout the project, even when they don't play an active role, in each phase. • Collaborative review and validation of the production should take place. • Actors should maintain ownership of their processes, and of the quality of their work. • Forms should be avoided; innovative evaluation techniques should be used. • Steady, continuous information and regular feedback should be provided and encouraged.
Broadening use	<ul style="list-style-type: none"> • Prototype users should share their knowledge widely. • A variety of presentations and discussions should be given. • Risk factors should be addressed with appropriate protocols.

Quality development	
Evaluation	<ul style="list-style-type: none"> • Continuous discussions should be held to improve the final product. • Time is a critical factor for such a project, and should be considered in evaluations. • Only an objective third party can provide valid, transparent, credible Quality Assurance that will be trusted by consumers. • Revision of the quality approach takes place throughout the project, with an emphasis on the clients' feedback. • Team reviews should be done regularly. • Collect users' feedback continuously. • Internal reviews should have priority over external audits, to value the staff members' feedback.
Model improvement	<ul style="list-style-type: none"> • Quality implementation might become stale after a while; activities should be renewed regularly. • New techniques should be tried, after the quality project reaches a stable stage. • Take into consideration every comment gathered, in order to improve the model. • Definition of two criteria for model improvement: availability and added value, with a clear definition of how to measure the two. • Extension of QA by a formal approach and delivery standards. • Listen to all opinions, for keeping the philosophy of continuous improvement, taking into account all mindsets and interests of the stakeholders. • Proceed with an "after-review action" with all stakeholders. • Model and expand the approach to other contexts of use. • Improve and utilize structured tools.
Quality discourse	<ul style="list-style-type: none"> • Making people "quality aware" is a long process; hold training and discussion sessions regularly. • Communicate with peers on their achievements. • Involve other quality experts and benchmark results. • Discuss dissemination internally.

The first main outcome of the case studies was the completion of the Quality Adaptation Model or QAM. This means that the phases cover all processes and aspects of quality management, and assurance implementations. Along the phases, critical success

factors in the practical use were identified. These success factors give further indications, regarding how to close the gap between the importance of quality and its complex realization in practice, in educational institutions. The most important success factor is also a focus of QAM: similar to other large-scale change processes, participation and commitment seem to be crucial in all phases, and must be established through various instruments, such as allocating resources, providing information, and allowing and valuing contributions of the stakeholders. Generally, it was shown that the model covers the most important processes for quality projects. By enriching the model with practical advice, users are supported in each phase of the quality project.

Conclusion

In this article, the appropriateness of existing quality standards, and their use in practice in educational organizations were discussed. As a first assumption, it was identified that there is still a quality gap on the organizational and individual level: both management and individuals are aware of the importance of quality, but there are no adequate approaches and adoption procedures. I analyzed how the quality standard ISO/IEC 19796-1 can contribute to change this situation, and discussed whether this standard is an adequate basis for quality development in organizations. As a first analysis result, the theoretical analysis showed that this instrument can be useful for educational organizations; however, it is necessary to define procedures to adapt it in an organization, and to adopt it on a broad base. To implement a quality system in an educational organization, four main steps are necessary: (1) context setting, (2) model adaptation, (3) model implementation and adoption, and (4) quality development. Each step should be performed with a broad range of actors to raise awareness and consensus. To facilitate this process, and to develop a quality system for an organization, the use of the ISO/IEC reference model for the description of quality approaches (QAM) was recommended and demonstrated.

Since the model is very generic, more research is necessary - especially to find specific solutions for different fields of usage (e.g., for schools). Additionally, research has been initiated to analyze the differences and adaptation requirements for different countries and regions, to include cultural aspects. Finally, a variety of tools is being developed to support this process, such as the initial

choice of a quality approach or the choice of quality instruments (Pawlowski, 2005). For the future, it can be expected that a variety of tools will be available to support this process, and to integrate quality into a broad range of educational organizations.

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Sintesi

Allo scopo di migliorare la qualità di processi, prodotti e servizi delle organizzazioni attive nel campo della formazione, è oggi possibile utilizzare e adattare il nuovo standard di qualità per l'apprendimento, l'istruzione e la formazione, ISO/IEC 19796-1, pubblicato nel 2005. L'obiettivo principale è quello di mostrare come questo standard possa essere utilizzato dagli attori di un'organizzazione di formazione, e come si possa realizzare il relativo processo di adozione.

La qualità rappresenta una questione di importanza crescente e, poiché non esistono, al momento, approcci universalmente validi e accettati, ci si può imbattere, nella pratica, in una serie di ostacoli che limitano l'implementazione e rallentano il raggiungimento degli obiettivi. Innanzitutto, le organizzazioni devono scegliere, tra i vari approcci esistenti, quello più adeguato, che soddisfi le necessità e i requisiti di ciascuna. In secondo luogo, occorre uscire dagli schemi tradizionalmente utilizzati. Il nuovo standard di qualità ISO/IEC 19796-1 è stato sviluppato proprio per far fronte a questi problemi. In ogni caso, implementare uno standard, in una organizzazione educativa, costituisce un compito complesso, che richiede competenze, impegno e risorse.

Dopo una premessa sullo stato attuale della qualità nell'e-learning, viene descritto e analizzato l'ISO/IEC 19796-1, in rapporto alla sua adattabilità nell'ambito delle organizzazioni che erogano formazione. A tal fine, viene presentato, in differenti contesti, il Quality Adaptation Model (QAM).

La discussione si sposta poi sull'appropriatezza degli standard di qualità esistenti e il loro utilizzo nella pratica. Come dato rilevante, emerge l'esistenza di un vero e proprio gap dal punto di vista organizzativo e individuale: sia i gestori, nel complesso, che i singoli individui sono coscienti dell'importanza della qualità, ma non esistono né approcci adeguati né procedure relative alle modalità di adozione. Si analizza, quindi, in che modo lo standard di qualità ISO/IEC 19796-1 possa contribuire a modificare tale situazione e quante possibilità di fatto esso abbia di costituire una base adeguata per un reale sviluppo della qualità. Un primo risultato dell'analisi teorica dimostra che lo strumento può essere effettivamente utile, ma che, in ogni caso, è necessario definire delle procedure specifiche per il suo adattamento e per la sua adozione su vasta scala.

E, dunque, al fine di implementare un sistema di qualità in un'organizzazione formativa, vengono individuati quattro step: (1) definizione del contesto, (2) adattamento del modello, (3) implementazione e adozione del modello, (4) sviluppo della qualità. Ogni step dovrebbe essere intrapreso con un'ampia gamma di attori, così da incrementarne la consapevolezza e il consenso. Per facilitare questo processo e per sviluppare un sistema di qualità per un'organizzazione, viene consigliato e dimostrato l'uso del modello di riferimento ISO/IEC per la descrizione degli approcci di qualità (il summenzionato QAM).

Dal momento che il modello ha carattere di generalità, sono necessarie ulteriori specifiche, allo scopo di trovare soluzioni appropriate, per i differenti campi d'uso, come ad esempio le scuole. L'attività di ricerca ha lo scopo di comprendere gli

aspetti culturali del contesto. In futuro, è auspicabile una disponibilità di strumenti differenziati, per sostenere tale processo ed integrare la qualità all'interno di una vasta gamma di organizzazioni impegnate nel campo dell'istruzione.