Plan for Applying Total Quality Management in Education for Torbat Heydariyeh University of Medical Sciences

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In this study, the appropriateness of existing quality standards and their use in practice in educational organizations were discussed. The study shows how the quality standard of TQM and QMTL and the possibility of their articulation to develop a holistic model can contribute to change this situation. The study alsoinvestigated whether this standard is an adequate basis for quality development in organizations. To implement a quality system in an educational organization, four main steps are necessary: context setting, model adaptation, model implementation/adoption, and 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 holistic model for the description of quality approaches was recommended. Since the model is very generic, more research is necessary, especially to find specific solutions to different contexts 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. 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.

Keyword: TQM, QMTL, holistic model, Iran.

خطة لتطبيق نظام الجودة الشاملة في التربية في جامعة توربات حيدريه للعلوم الطبية

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هدفت هذه الدراسة إلى مناقشة مدى ملاءمة معايير الجودة القائمة وممارستها عمليا في المؤسسات التربوية. ناقشت الدراسة الحالية معيار الجودة لإدارة الجودة الشاملة وضبط الجودة في التعليم، وكذلك إمكانية التعامل معها بهدف تطوير نموذج جودة شامل يمكن أن يسهم في تغيير النظام التربوي الحالي. كما ناقشت الدراسة ما إذا كان هذا المعيار كاف لتطوير الجودة في المؤسسات الأكاديمية. كما ناقشت الدراسة أنه لكي يتم تنفيذ نظام للجودة في المؤسسة التعليمية، هناك أربع خطوات رئيسية يجب اتخاذها وهي: تحديد السياق، تكييف النموذج، تنفيذ النموذج واعتماده، وتطوير الجودة. وينبغي تنفيذ كل خطوة بالتعاون مع مجموعة من الجهات الفاعلة كي يتم رفع مستوى الوعي والتوافق. ولتسهيل هذه المهمة، ولتطوير نظام جودة في المؤسسات التربوية فإنه من الضروري استخدام نموذج شمولي لمفهوم الجودة. وبما أن هذا النموذج عام جدا، فإن إجراء المزيد من البحوث بات أمرا ضروريا، لا سيما لايجاد حلول محددة وواضحة لمختلف مجالات الاستخدام كالمجال التربوي، على سبيل المثال. بالإضافة إلى ذلك، تم الشروع بإجراء تحليل للاختلافات ومتطلبات التكيف لمختلف البلدان والمناطق لتشمل الجوانب الثقافية. وأخيرا، تم العمل على تطوير مجموعة متنوعة من الأدوات التي تدعم ذلك، مثل اختيار نهج للجودة بداية أو اختيار أدوات الجودة. من المتوقع أن تتوفر مجموعة من الأدوات في المستقبل لدعم هذه العملية ودمج الجودة في مجموعة واسعة من المؤسسات التعليمية.

الكلمات المفتاحية: إدارة الجودة الشاملة، تعلم نظام إدارة الجودة الشاملة، نموذج شامل للجودة، ايران.

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Generally, quality is an issue of increasing importance in educational organizations (Ehlers, Hildebrandt, Görtz & Pawlowski, 2005). However, there are currently no commonly accepted approaches (Kefalas, Retalis, Stamatis & Kargidis, 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 that meet their needs and requirements. Secondly, successful implementation depends on overcoming typical barriers (Masters, 1996). The new quality standard Holistic model was developed to overcome those problems (Srikanthan & Dalrymple, 2003). However, implementing a standard in an educational organization is a complex task requiring competencies, commitment, and resources.

In the strategic planning and management models and a host of strategic management literatures have identified the 3 key strategic planning phases as:

1) Strategic Analysis – steps 1 to 5;
2) Strategic Formulation and Choice – step 6,
3) Strategic Implementation – step 7, as adapted in Table 1. (Thompson & Strickland, 2005; Johnson et al., 2003; Wheelen & Hunger, 2004; Mintzberg, Lampel, Quinn,and Ghoshal, 2003; Hitt, Ireland & Hoskisson, 2005).

Implementing the model

Central to an effective 'Transformation Model' as described by Harvey and Knight, is a quality system that drives (continuous) improvement from the staff-student interface (Harvey & Knight,1996).The senior management's role is to 'encourage and ensure' it 'whilst developing a sensitive but effective external monitoring process'. The Engagement Theory of Haworth and Conrad seems to fit well within the broad framework of the 'Transformation Model' as it elaborates and categories the interactions at this interface among 'students, faculty (academics) and administrators'' in enriching the learning experience for the students'(Haworth & Conrad, 1997). In the 'University of Learning' model, the learning experience, considered as the 'ability to discern the relevant aspects of variation', is brought about by the synergistic involvement of academics in intersecting networks of program and research teams (Bowden & Marton, 1998). The

'Responsive University Model' adds yet another dimension to this notion of transformation – the nature of its social context, at student, community and national levels (Tierney, 1998).

Thus at the implementation level, there is a clear complementarity among the models to develop a rich picture of the nature of the required actions. Overall the features of a Generic Model addressing the Quality Management in Teaching and Learning (QMTL), based on preliminary set of models chosen above, can be summarized as follows:

- A clear focus on 'transformation' of the learners and
- A synergistic collaboration at the learning interface.

Table1
Strategic Planning and Implementation Process

Step	Task	Sub- task
1	Performance Evaluation	1.1 Evaluate current performance results (inancial, Market, Operation)
		1.2 .Examine and evaluate the current: Mission, Objectives, Strategies, Policies.
2	Review Strategic Managers	2.1 Board Directors.
		2.2. Top Management Philosophies, Style, Attitudes , Values.
3	External Analysis	3 a. External Environment Analysis
		3 b. External Factors Analysis Summary.(Opportunities, Threat)
4	Internal Analysis	4 a. Internal Environment Analysis (Value Chain, Resource Audit, Financial Analysis)
		4 b. Internal Factors Analysis Summary (Strengths, Weakness)
5	Analyze Strategic Factors in light of current situation	5.1. SWOT Analysis.
		5.2. Review and Revise Mission and Objectives
6	Alternative Strategy	6.1. Generate and Evaluate Alternative Strategy
		6.2. Select and Recommend Appropriate Alternative
7	Implement Balanced Strategy	Learning → Process→ Customer → Financial

Thus a clear basis for the specification of the features of the Generic Model for Quality Management in Teaching and Learning (QMTL) in higher education seems to be emerging.

As more studies are made into educational research, the chances are that features of the model would be amplified and clarified.

Articulation between total quality management (TQM) and quality management in teaching and learning (QMTL) models. [TQM-QMTL]

The need for distinct approaches to the service and teaching areas of higher education proposed isbased on their distinctiveness of emphasis. In the service areas student is clearly the customer and is the focus of all processes. In the teaching and research function students play the key role of a participant and the focus is on the attribute of their learning, as determined by:

1. The global parameters of content and resources governing the curriculum design, and
2. The subtle parameters of delivery and assessment governing the 'enhancement' of the learner.

TQM addresses the service areas, focusing on the products of delivery by measuring, monitoring and continuously improving the processes. QMTL, on the other hand, focuses on the empowerment of the course team across all the boundaries to facilitate a dialogue centred on learning. The techniques of TQM are well understood and documented in the industry practice, whereas those of QMTL are rooted in the educational research literature, illustrated initially on the basis of a synthesis of the four models discussed above. In spite of the structural difference in the scope of the two models, there is a substantial commonality of requirements in the implementation phase. First of all, their focus on students albeit to differing levels of subtlety. Secondly, at the operational level, collaboration is a key requirement in both the models although the fields of interaction may vary to a large extent. Both the models also require a visible commitment and support from the senior management to effectively continue to flourish. Thus, by and large, the pattern of interaction and governance required for both the approaches is the same. Hence the development of a comprehensive model covering the education and service delivery aspects on the campus should work out to be reasonably mutually compatible.

The rationale of the use of TQM-QMTL Holistic model are:

- The measurements can be consolidated at the department, faculty and university to provide an inter-departmental and inter-faculty comparative or individualized performance measure. This will provide an insight into how a department unit is performing as compared to the faculty mean or the university mean. The key is an in-depth cause-effect analysis using the results for the development of quality and strive for continuous improvement.

- On the audit and assessment aspect, each of the department and faculty will do its own assessment using the recommended individual and consensus review approach to reach an unbiased and democratic consensus based on the scoring guidelines. This is important as all members in a department or faculty would be unified towards the same direction. The audit and assessment by the Internal Audit and Assessment team to provide an assessment from a third party perspective will make use of the same process, procedures and scoring guidelines. Any differences between the department's and the faculty's assessment from the Internal Audit and Assessment Team can be identified and hammered out. This would lead to a very rich and diverse exchange of viewpoints and perspectives without causing conflicts as both sides approach the audit and assessment from the same QA guiding principles.

- On the management aspect, as the philosophy of the TQM-QMTL is "management through measurement", the means analysis and comparison will provide the metrics for an in-depth insight into the ways and means that needs attention and improvement. This will lead to the reinforcement of the continuous improvement, as the metrics will be the key indicators of performance showing what needs to be improved on. This tries to avoid the fact that after the Self Assessment Report (SAR) has been developed and audited, and the feedback re-

ceived from the Internal Audit and Assessment Team (IAAT) report, the reports are put on the shelf to gather dust until the next audit and assessment cycle.

- On the sharing and learning aspect, this underlies a very fundamental philosophy of sharing and dissemination of knowledge throughout the organization. All the SAR and IAAT reports and findings and analysis are put onto the university QA web-site whereby all units can have access to and can look at how each unit is performing and how they can learn from each other. Above all, this will ensure the transparency for the quality assurance effort university wide. The sharing and dissemination of the information will pave the foundation for the organization to learn as one making it into a learning organization. The crux is that everyone learns from everyone for continuous improvement towards the same result as defined in the quality assurance policy.

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 have been developed and implemented in different sectors, such as higher education (Cruickshank, 2003) ,schools (Greenwood & Gaunt,1994), in the e-learning sector (SRI Consulting Business Intelligence, 2003), or the service industry in general (Yasin, Alavi, Kunt, & Zimmerer, 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 et al. (2005) indicate that quality is a multi-perspective construct. 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,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 fulfill requirements of customers and other interested parties"(International Organization for Standardization, 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 incorporatingthe 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 total quality management (Deming ,1982). Total quality management has also been applied to specific sectors and scopes, including higher education management (Cruickshank, 2003). Additionally, several concepts have been developed for highly specific purposes, such as metrics for data quality or learners' and teachers' performance (Pipino, Lee, & Wang , 2002; Shaha, Lewis, O'Donnell, Brown, 2004).

The last perspective deals with the focus and methodology of the quality approach. Dippe, Kollia, Lindholm, Lindström & Tsakarissianos give a rough distinction of the subject of quality assurance: processes, products, and competencies (Dippe, Eltén, Kollia, Lindholm, Lindström & Tsakarissianos, 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, 2006). As a conclusion of this exemplary review on varying perspectives of quality, we 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 to 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)competencies?
- **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 with regard to the above-mentioned attributes (CEN/ISSS ,2006). 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 TQM (Total Quality Management) or QMTL (Quality Management in Teaching and Learning) are widely used and well accepted in the field of quality management. However, the effort to adapt those approaches is very high (Srikanthan & Dalrymple ,2003). 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(Srikanthan & Dalrymple ,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 of related approaches for a specific quality objective exist. These standards are used to assure quality for very specific aspects, such as data quality or interoperability.

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 (Borahan & Ziarati, 2002). To identify those needs, a study was performed on the European level in 2004 (Ehlers et al., 2005). The study indicated that the 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 in either 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 fulfill 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 ap-

proaches so users do not need to choose between a variety of approaches.

The quality standard for learning, education, and training: TQM-QMTL

In the following section, we shall analyze whether and how an international quality standard can fulfill the needs and requirements of educational organizations. Furthermore, we shall explain the use of this standard. The excellence in the higher education in the TQM-QMTL Model is not limited to traditional measure profit/loss but encompasses the areas such as leadership, people management and satisfaction. The excellence in higher education is summarized in Table 2 (Hides, Davis & Jackson, 2004).

Table 2
Excellence in Higher Education

No	Excellence
1	Achieving mission /vision
2	Achieving /exceeding benchmarks and internal measure
3	Best practice
4	Community agreement
5	Cost-effective
6	Customer/stakeholder satisfaction
7	Dissemination of good practice nationally and internationally
8	Learning outcomes
9	Making optional use of all resources-financial, human, assets.
10	Match between desired and actual perception
11	Positive atmosphere in staff and student environment – integration in teaching and research
12	Quality of teaching and learning
13	Relative to starting point – achieving targets.

The TQM-QMTL, as such, is the main quality management model for a balanced approach towards the achievement of academic excellence as defined in the strategic direction of THUMS to sustain its competitiveness through a balanced focus on:

- The Academic Excellence focus – defines the mechanism and the constituents of academic achievement and outcomes of Torbat Heydariyeh University of Medical Sciences.
- The Reverse Growth focus – defines the varieties and sources of the academic and service offers of Torbat Heydariyeh University of Medical Sciences.
- The Stakeholders Value Creation focus – defines the value created tailored to meet the stakeholders needs and requirements

The Quality and Planning focus – defines the outcome assessment that leads to the strategic planning and quality management of the **Torbat Heydariyeh University of Medical Sciences.**

- The Process focus – defines the academic and administrative processes needed to achieve create value towards the THUMS Academic Excellence and Revenue Growth.
- The Human Capital, Information Capital and Organization Capital focus – defines the human, information, and organization capital needed to achieve the above focus points.
- Despite many successful stories about the implementation of quality management based model, not all researchers support the idea of adaptation of an excellence model for higher education. Becket and Brooks claimed that despite the benefits of TQM, there was a need to find a better approach for measurement of the quality due to the fact that an adopted industrial model failed to address the learning experience of a diverse student body (Mintzberg et al, 2003). The reasons for difficulty of adapting QM model for higher education are presented in table 3. (Vroeijenstijn ,2001).

Table 3
Reason for Difficulty of Adapting Quality Management for Higher Education

No.	Reason
1	A higher education institute is not a firm and does not produce graduates
2	Not clear what the product is
3	Who is the client of higher education?
4	It is not a hierarchical organization
5	The excellence model can be used to analyze the management but not assess the quality
6	The concept of quality is very complicated
7	The control of the quality has a different accountability

Despite the fact that QM model was not designed for the need of higher education, there are numerous recent evidences of its implementation in higher education sector (Clayton, 1993; Mintzberg et al,2003; Boele, Burgler & Kuiper, 2008; Hides, Davis, Jackson,2004).Most universities are non-for-profit organisations however their relationships with the stakeholders in the main areas of their activities are formed based on profit. Even the measure of their research activities such as quality and number of scientific ar-

ticles is assessed by the amount of grant income that the publications are lead to. The core activities of the higher education are: research, education and service. An Quality Management Model can be used for assessment the quality of these activities in two phases: Process quality and product quality. **Figure 1** demonstrate the input-process-output framework of quality classification for the three main activities of the higher education.

Every quality measure has to start looking at the formulated mission statement and agreed goals and aims. The mission statement encompasses the inputs, processes and outputs. The variety of the business of higher education requires a well-defined mission statement satisfying different stakeholders. It explains the direct effect and the level of management involvement in the achievement of the set level of quality requirements. The TQM-QMTL uses different tools to assess the quality of management and policies defining the management relationships with the staff and stakeholders. From the point of view of quality assurance the management can be defined as a tool required by leadership to cope with the complex changes (Davis, Hides & Casey,

2001). TQM-MQTM Model provides a strong tool to help leadership to drive change. The TQM-QMTL self-assessment ability which focuses on 'strengths' not 'scores' and 'area of improvements' not 'weaknesses' provides such a tool for improvement.

This protocol has presented a discussion on the requirement of using a model of quality assessment for higher education in Torbat Heydariyeh University of Medical Sciences. Iranian Universities need to conduct their activities in a more business-like manner with the implementation of an TQM-QMTL Model as an appropriate quality assurance mechanism. The TQM-QMTL Model focuses on mission definition, leadership and the processes which are shared between the core activities of higher education. Conversely, the core activities of the universities are all intertwined and so the implementation of such policies and methods will guarantee the quality in all aspects of its activities.

A new formulated standard TQM-QMTLS provides a reference framework for the description of quality (RFDQ) approaches TQM – QMTL.
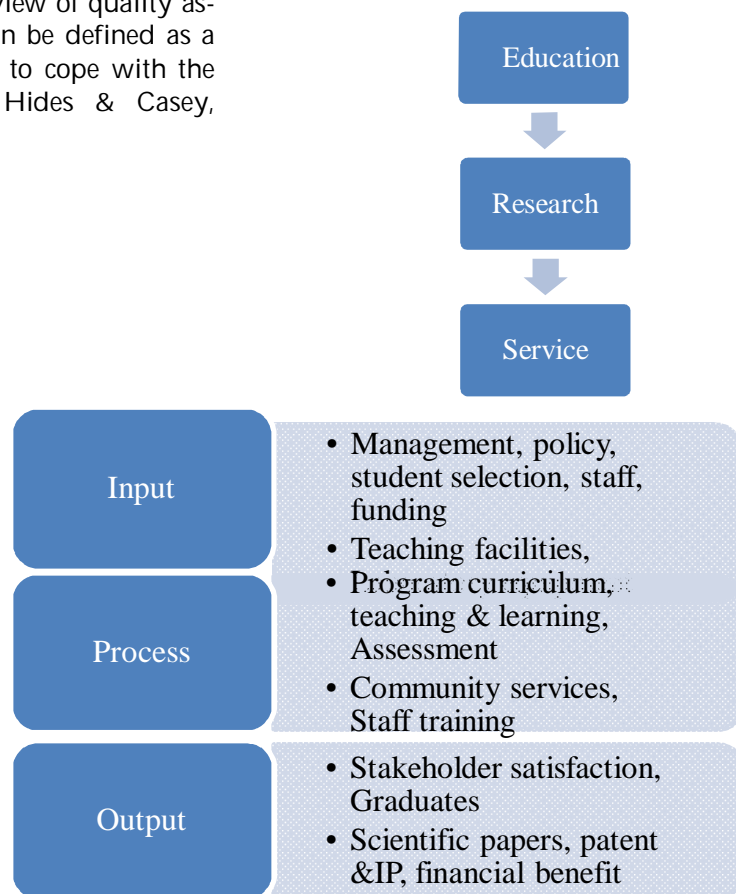

Fig. 1. The Input-Process-Output Framework of Quality in Higher Education

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:

PART. I. A description scheme for quality approaches.
PART. II. A process model as a reference classification.
PART. III. Reference criteria for evaluation.

The RFDG 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 this scheme table 4.

The description model serves only as 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. Finally, with regard to table 4 and table 5, TQM-QMHL Model contains a list of reference criteria for the assessment of the quality of learning products. The checklist criteria developed and include functional as well as media and learning psychology-related reference criteria. table 6 show reference criteria for the model.(Ittner & Larcker, 1997; Deming ,1982; Shaha, Lewis, O'Donnell, Brown, 2004; Pawlowski ,2005).

Table 4
Description Model for Quality Approaches of TQM-QMTL Model

Attribute	Description	Example
ID	Unique identifier	TQM-QMTL
Category	Main process	Course development
Process name	Process name	Method selection
Description	Description of the process	Within this process the didactic concepts and methods are evaluated and selected
Relations	Relation to other processes	Before the method selection a target group analysis must be performed
Sub-processes/ Sub-aspects	Sub-processes/ sub-aspects/ tasks	• Method identification • Method alternative • 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 competencies and learning styles. • Methods selected 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 TQM-QMTL – CRITERIA
Standards	Standards used	As presented in Methods Guidelines Handbook
Annotation/ example	Further information, example of usage	The methods used should be documented and listed in the didactical best practice collection

Table 5
Process Model of TQM-QMTL Model

ID	Category	Description	Sub – process
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 competency levels
7	Evaluation/ optimization	Description of the evaluation methods, principles, and procedures	7.1 Planning 7.2 Realization 7.3 Analysis 7.4 Optimization/ Improvement

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, there is no commonly accepted quality framework for the field of learning (Kefalas, Retalis, Stamatis & Kargidis ,2003) . Table 7 shows the main aspects of my analysis for the TQM-QMTL Model. Generally, the TQM-QMHL Model quality standard provides a harmonized approach to manage, assure, or assess quality. Furthermore, the existing variety of standards, quasi-standards, and related standards can be modeled using TQM-QMTL Model. 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 TQM-QMHL Model 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 TQM-QMHL Model was developed. The model suggests using the RADAR Scoring Matrix as a tool for measurement. RADAR stands for Results as the organization achievements, Approach as the plan and policies, Deployment as the extent to which the approaches are implemented, and Assessment and Review covering what an organization does to assess and review both the approach and deployment of approach.

Table 6
University Leadership Sub- Criteria for Assessment Of Management

No.	Criteria
1	The institution has clearly formulated goals
2	The goals express clearly the purpose to achieve
3	The goals have been formulated in constancy with all stakeholders
4	The goals are well known to all
5	Institutional planning and decision making are guided by the goals
6	The institution reconsiders the goal regularly
7	The goals show the profile of the institution
8	The goals are translated in measurable objectives
9	The goals and objectives are translated in clear policy plan

Scoring system

Srikanthan & Dalrymple (2003) in their proposal of Holistic Model suggest a scoring system for evaluation of variables .Thus may we suggest the scoring system that it is a composite of educational and service criteria. Hence the development of a comprehensive scoring system covering the education and service delivery aspects should work out to be reasonably feasible. The TQM-QMTL Model scoring system and guidelines thus developed and presented in Tables 8 and 9. With regard to table 9(Scoring Guidelines for education criteria of the TQM-QMTL Model) we can evaluation points that have been collected in table 8. For example, Senior Leadership Item shows 70 points that if we review table 9 (scoring guidelines for education criteria of the TQM-QMTL Model) we can see that points between 70-80 are systems with this Specifications: *Current performance is good to excellent based on established academic standards and/ or performance and outcome indicators in areas of importance to the key organizational requirements.*

Table 7
Analysis Grid

No.	Aspect	Result
1	Harmonization	TQM-QMTL 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.
2	Completeness	The description model contains the main element of process modeling upon which all kinds of processes can be modeled. As a weakness, there are no pre-defined relations sequencing the processes.
3	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.
4	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.
5	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.
6	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,

Table 8
Scoring System for TQM-QMTL Model

Category	Item	Points
Leadership	Total	120
	Item 1.1: Senior Leadership	70
	Item 1.2: Governance and Societal Responsibilities	50
Strategic planning & Vision and Mission	Total	115
	Item 2.1: Strategy Development	40
	Item 2.2: Strategy Deployment	45
	Item 2.3: Vision & Mission	30
Student activities	Total	80
	Item 3.1: Student Engagement	40
	Item 3.2: Guidance and Counseling system	40
Measurement, Analysis, and Knowledge Management	Total	90
	Item 4.1: Measurement, Analysis, and Improvement of Organizational Performance	45
	Item 4.2: Management of Information, Knowledge, and Information Technology	45
Workforce Focus	Total	85
	Item 5.1: Workforce Engagement	45
	Item 5.2: Workforce Environment	40

Table 8
Scoring System for TQM-QMTL Model

Category	Item	Points
Process Management	Total	85
	Item 6.1: Work Systems	35
	Item 6.2: Work Processes	50
	Total	50
Academic Services	Item 11.1: Academic Services	25
	Item 11.2: Social Responsibility	25
Teaching and Learning	Total	200
	Item 8.1:Curriculum	50
	Item 8.2: Education and Delivery Design processes	50
	Item 8.3: Students, Stakeholders and Employment Markets	50
	Item 8.4: Student Services	25
	Item 8.5:Supporting Processes	25
Finance and Budgeting	Total	40
	Item 9.1: Financial and Budgetary Sources	20
	Item 9.2: Allocation and Audit	20
Research	Total	120
	Item 10.1: Policy, Plan and Research	40
	Item 10.2: Research Process	40
	Item 10.3: Research Results	40
Quality Assurance and Results	Total	475
	Item 7.1: Product Outcomes	100
	Item 7.2: Student and Stakeholder focused Outcomes	70
	Item 7.3: Financial and Market Outcomes	70
	Item 7.4: Workforce-focused Outcomes	70
	Item 7.5: Process Effectiveness Outcomes	70
	Item 7.6: Leadership Outcomes	70
	Item 7.7: Internal Quality Assurance	25

Table 9
Scoring Guidelines for Education Criteria of the TQM-QMTL Model Results

Score	Criteria
0%	• There are no organizational performance results or poor results in areas based on established academic standards and/ or performance and outcome indicators reported.
10% - 20%	• There are some improvements and/or early good performance levels in a few areas based on established academic standards and/or performance and outcome indicators reported. • Results are not reported for many to most areas of importance to the key organizational requirements.
30% - 40%	• Improvements and/or good performance levels based on established academic standards and/ or performance and outcome indicators are reported in many areas of importance to the key organizational requirements. • Early stages of developing trends and obtaining comparative information are evident. • Results are reported for many to most areas of importance to the key organizational requirements.
50% - 60%	• Improvement trends and/or good performance levels based on established academic standards and/ or performance and outcome indicators are reported for most areas of importance to the key organization requirements. • No pattern of adverse trends and no poor performance levels are evident in areas of importance to the key organizational requirements. • Some trends and/or current performance levels evaluated against relevant comparisons and/or benchmarks show areas of strength and/or good to very good relative performance levels. • Organizational performance results address most key student, stakeholder, market, and process requirements.
70% - 80%	• Current performance is good to excellent based on established academic standards and/ or performance and outcome indicators in areas of importance to the key organizational requirements. • Most improvement trends and/or current performance levels are sustained. • Many to most trends and/or current performance levels-evaluated against relevant comparisons and/or benchmarks, show areas of leadership and very good relative performance levels. • Organizational performance results address most key student, stakeholder, market, process, and action plan requirements.
90% - 100%	• Current performance is excellent based on established academic standards and/ or performance and outcome indicators in most areas of importance to the key organizational requirements and can be benchmarked at national or international level. • Excellent improvement trends and/or sustained excellent performance levels are reported in most areas. • Evidence of education sector and benchmark leadership is demonstrated in many areas. • Organizational performance results fully address key student, stakeholder, market, process, and action plan requirements

B. Approach – Deployment.

Score	Criteria
0%	• No systematic approach as per the (P), (D), (C) and (A) of PDCA (Plan, Do, Check, Act) is evident; information is subjective and unreliable and sketchy.
10% - 20%	• The beginning of a systematic approach with (P) according to the basic requirements of the performance criteria as supported by documents is evident. • Major gaps exist in deployment that would inhibit progress in achieving the basic requirements of the performance criteria. • Early stages of transition from reacting to problems to a general improvement orientation are evident.
30% - 40%	• An effective, systematic approach, with (P) and (D) according to and responsive to the basic requirements of the performance criteria as supported by documents is evident. • The approach is deployed, although some areas or work units are in early stages of deployment based on its (P). • The beginning of a systematic approach to evaluation and improvement of key processes based on performance or outcome indicators is evident.
50% - 60%	• An effective, systematic approach, with (P), (D) and (C) according to and responsive to the overall requirements of the performance criteria and key organizational requirements as supported by documents is evident. • The approach is well deployed, although deployment may vary in some areas or work units and is aligned with basic organizational needs identified in the other performance criteria. • A fact-based, systematic evaluation and improvement process based on performance or outcome indicators is in place for improving the efficiency and effectiveness of key processes and outcomes or outputs.
70% - 80%	• An effective, systematic approach, with (P), (D), (C) and (A) according to and responsive to the multiple requirements of the performance criteria and current and changing educational service needs as supported by documents is evident. • The approach is well deployed, with no significant gaps and is well integrated with your organizational needs identified in the other performance criteria. • A fact-based, systematic evaluation and improvement process and organizational learning/sharing are key management tools; there is clear evidence of refinement, innovation, and improved integration as a result of organizational-level analysis and sharing based on performance or outcome indicators.
90% - 100%	• An effective, systematic approach, fully responsive to all the requirements of the performance criteria and all current and changing educational service needs that can be benchmarked and supported by documents is evident. • The approach is fully deployed without significant weaknesses or gaps in any areas or work units and is fully integrated with your organizational needs identified in the other performance criteria. • A very strong, fact-based, systematic evaluation and improvement process and extensive organizational learning/sharing are key management process and extensive organizational learning/sharing are key management tool; strong refinement, innovation, and integration, backed by excellent organizational-level analysis and sharing based on performance or outcome indicators, are evident

Adaptation and adoption of TQM-QMTL

The Model TQM-QMTL is presented in Figure. 2. It consists of different phases and steps to bring quality approaches, specifically QMTL, into practice. 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 2 summarizes the relationship of the models.
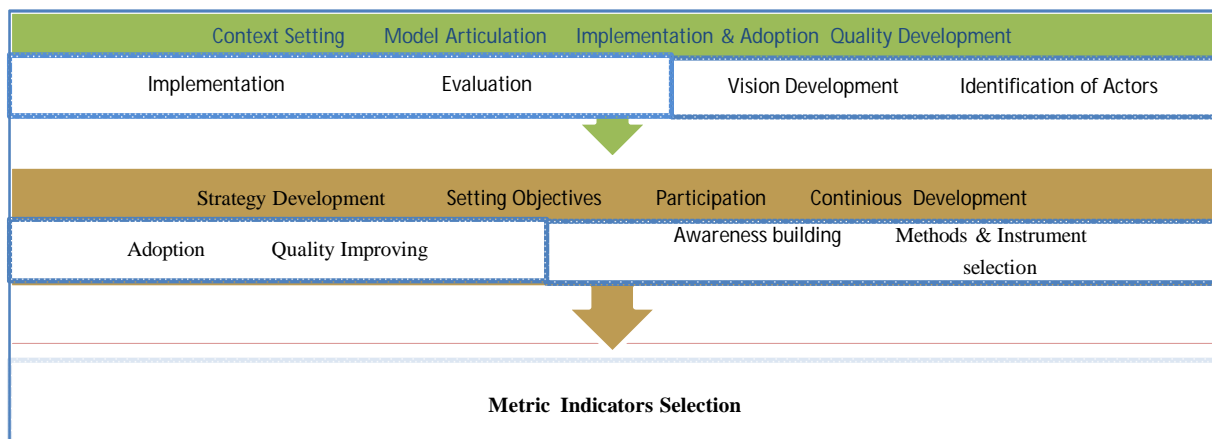

Fig. 2. Phases of the Quality Adaptation Model

The Holistic adaptation model

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, the inability to change organizational culture, or the inadequate use of empowerment and teamwork, focusing on academic support services, missing to address the core area of teaching and learning (Masters ,1996; Srikanthan & Dalrymple ,2003). As shown in fig. 3, the TQM- QMTL Model follows four-step of articulation process. These steps are not performed iteratively but are individually scheduled. Context setting covers all preparatory activities for the articulation process. Model articulation 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. This continuity can be achieved by using four-step quality model-the plan-do-check-act (PDCA) cycle (Hides, Davis & Jackson, 2004). These phases contain several activities, which are explained in the following paragraphs.
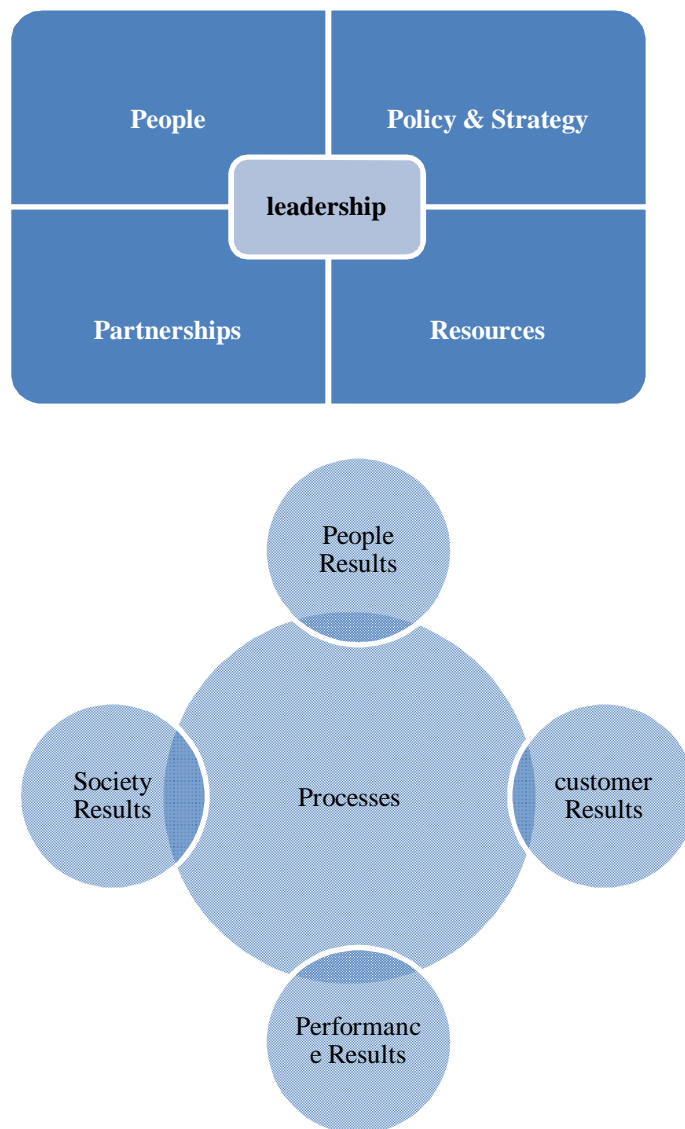

Fig. 3: The TQM-QMTL Model

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 (Ittner & Larcker, 1997).

The redefinition should not be only management's responsibility. The process, which actively sets new directions for 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 competencies 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 (Hitt, Ireland & Hoskisson, 2005; Srikanthan & Dalrymple ,2003).

Model articulation: individualizing TQM-QMTL

To establish the details of quality development in an educational organization, the reference model TQM 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.

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.

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 (Srikanthan & Dalrymple, 2003).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. The 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 (Manouselis & Sampson,2004; (Dippe, Eltén, Kollia, Lindholm, Lindström & Tsakarissianos, 2001). By re-using existing approaches, the articulation effort is decreased. However, this is still a future scenario, since not all providers of quality approaches use the description scheme of TQM-QMTL. 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 (Hirata, 2006; Lytras, Doukidis, & Skagou ,2001). Typical metrics are, for example, drop-out rates and return on investment/education. These me-

trics 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 10.

Table 10
Sample Process Description

ID	
Category	Framework analysis
Process	Analysis of staff resources
Description	Identification and description of actors, their qualifications, competences and availability.
Sub-processes/ sub-aspects	• Roles / functions • Competences / formal qualifications • Availability of actors
Objective	To clearly identify and correctly assess the roles/functions, competencies/ qualifications, gaps, and availability of actors and users who will be involved in top management courses
Methods	Methods of empirical social/educational research (e.g. document analysis);consultation of specialists, staff profile analysis
Result	• Description of roles/functions of staff • Description of competencies/formal qualifications of staff • Description of availability of staff
Actors	Project manager, experts, learners
Metrics / Criteria	Reference quality criteria
Standards	Project management and documentation guidelines; standards for social research

Model implementation and adoption: Making the concepts work

In the initial articulation 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 (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 (Hitt, Ireland & Hoskisson ,2005). Therefore, further users need to be involved and become familiar with the quality concepts to systematically broaden the use of the quality system.

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 (Strikanthan,1999). 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.

TQM-QMTL model 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 to be performed in **Torbat Heydariyeh University of Medical Sciences.**The case study method was used to:

▪ Analyze the appropriateness in different contexts, and
▪ To observe potential improvements of the model.

Case studies may be 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.

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. 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: context setting, model adaptation, model implementation/adoption, and 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 Holistic model for the description of quality approaches was recommended. 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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