TOWARDS E-LEARNING QUALITY
A Proposal of e-Learning Quality Model

Rosa Cabedo Gallén

Dpto. de Lingüística Aplicada a la Ciencia y Tecnología. E.T.S.I. Montes, Universidad Politécnica de Madrid
Ciudad Universitaria s/n, Madrid, Spain

Abstract: The final purpose of this paper is to present the project of my Doctoral Thesis, the development of a quality model for Spanish e-Learning teaching that provides an evaluation tool at service of managers and professionals in charge of training actions. This educational innovation research performs on quality environment, but from a didactic perspective. Computer science, quality, pedagogy, linguistics, psychology and sociology environments converge at this research. The study of models, best practices and quality guidelines, contributions of e-Learning training and the characteristics of Spanish teaching build up the project. An online survey and interviews are taken into account too. The goal of this Thesis project is covering the absence of a specific quality model for e-Learning environment that meets the specific needs of e-Learning organizations and deals with the services management.

1 INTRODUCTION

The adaptation of the society to a new way of information and knowledge access goes through formation. In particular, e-Learning is associated with a new educational concept that integrates the use of technology and new pedagogical guidelines, which promotes the use of Information & Communication Technologies (ICT) and prepares users in their insertion in the knowledge society.

The study of several international initiatives (COM, 2002; COM, 2003) and European Commission projects have been focused on education and e-Learning. Deepening on quality and e-Learning issues has revealed the need of a quality e-Learning (Dondi, 2006; Ehlers, 2007a; Ehlers, 2007b) that should enable a better management of e-Learning services.

Many organizations have their main topic on aspects such as quality of services and adopt a customer-oriented approach. This innovative research involves the commitment to work towards a continuous improvement culture in customers' satisfaction, which culminates in the implantation into the organizations of this culture in the quality of services.

Systems Quality Assurance (SQA) represent a set of heterogeneous and very varied alternatives that need to be investigated more thoroughly. Figure 1 aims to clarify the scope in which each of the models, best practices and quality guides are suited, especially for the IT services management-oriented ones.

Several alternatives with a clear orientation towards TI services management, such as ITIL framework and standard ISO 20000, are shown in Figure 1. ITIL provides a framework, which the standard ISO 20000 is based on, the first certifiable international standard for TI services management-oriented.
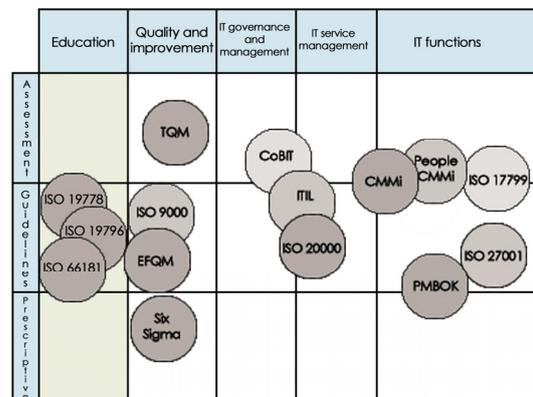

Figure 1: Topology of IT-related standards (adapted from ISACA).

The quality management of virtual training is supported by its first standard publication, the standard UNE-EN-ISO 66181:2008 (AENOR, 2008), and it has the intention of serving as a guide both for customers and for providers to proceed certifying virtual environments quality.

It is important to note that the new quality e-Learning model will not be the result of comparing the alternatives stated on Figure 1, but the best ideas are the core of the future quality model.

The framework selected for this research is the e-Learning framework of Badrul Khan, guidance for the design, development, implementation and evaluation of flexible, open and distance learning environments. Khan recommends eight dimensions (Khan, 2005, p. 14) with a set of factors to take into consideration in each one (sub-dimensions) (Figure 2). This framework is the reference guide and with the help of its dimensions, training actions will be analyzed in detail.
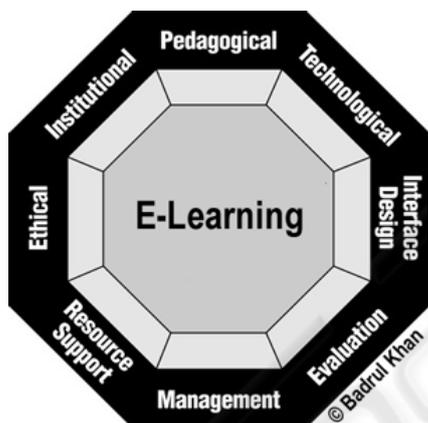

Figure 2: E-Learning framework of Khan (Khan, 2001).

The ICT applied to Spanish learning has been the selected research field, which is going to be made the development of the project. Spanish, regardless of personal and professional interests, is regarded as an economic asset that gives rise to a growing interest in academic, cultural and business areas. However, while Spanish is emerging as one of the languages with most future projection of the 21st century, there is a long way to cover in the ICT application to Spanish learning, as stated in the *I Acta Internacional de la Lengua Española*, that took place in 2006 in San Millán de la Cogolla.

In view of the need of a e-Learning quality, joined the importance of TI administration and the impetus on Spanish teaching, comes the need to develop a new specific quality model for e-Learning services management that covers the particular needs of languages e-Learning teaching, specifically Spanish.

The Figure 3 shows the theoretical model, which represents the main elements of the framework proposal, including the end-user.

This framework is made up on the one hand of processes that will support specific formation services (examples of those services are administration, tutoring or assessment services) and on the other hand of other services that give support to those processes, such as services that manage any incidents, including help-desk.

The framework covers the whole e-Learning organization, which forces to consider those processes that are used in the own courses development, such as content creation processes. However, the framework scope goes beyond e-Learning organization borders (customers and providers of the organization).

Pedagogy has an important role on this proposed framework, although its relationship with the quality area is indirect (see Figure 3). Khan's framework will be in charge of building the bridge between them. Activities such as instructional design, the pedagogical model adopted, the content selection, etc are examples of this situation.

Finally, the focus moves on IT Governance processes, which have to be aligned with e-Learning organizations strategies.

This project aims to turn into a quality model for Spanish teaching in the e-Learning environment that provide policy-makers and managers with a tool that helps them in the e-Learning products and services evaluation.
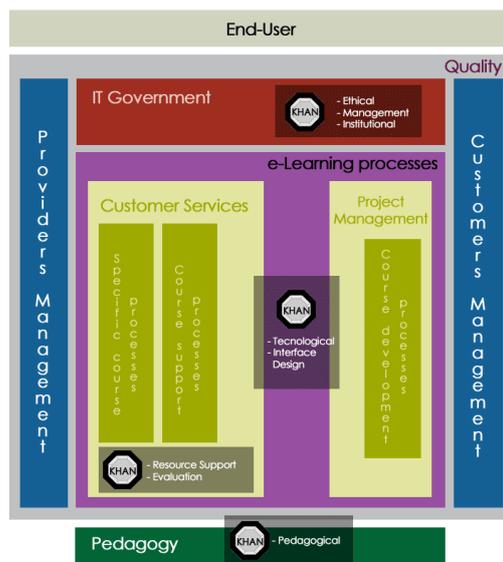

Figure 3: Cabedo's Framework proposal (2009).

2 METHODS AND MATERIALS

This innovation project has a clear technological approach. For this reason it is important the information obtained through digital resources.

There are four clearly delimitated stages in this project that have been carefully planned.

2.1 Initial Stage: Research

Formation, languages and quality are being studied in depth on this first stage.

A study of several training actions is going to help to delimit the scope of the project with reference to formation area. The result of this study is the e-Learning definition adjusted to research context, that is to say, aligned with framework proposal philosophy. Other decisions of pedagogical and technological nature are taken all along this stage. Going into details, the study on e-Learning characteristics, advantages and disadvantages result to a group of success and failure e-Learning factors. These factors, which belong to this formative modality, will be directly incorporated into the third stage project.

These factors will be converted to a subset of indicators of e-Learning quality and their impact will have to be periodically measured, according to the philosophy of continuous improvement.

Teaching languages, in particular Spanish, have several peculiarities for deepening at this stage. The pattern of education followed is the Common European Framework of Reference for Languages (Instituto Cervantes, 2002). This document fixes the guidelines for the development of languages programmes.

Technology is the tool that allows a greater expansion of training actions in Spanish eLearning teaching. It allows the access to learners who can't or don't want to assist to a face-to-face instruction. Spanish e-Learning formation pursues that learners obtain a list of competences, which are going to feed the framework that will manage the e-Learning quality model.

The adoption of a customer satisfaction-oriented approach by the organizations forces to understand, evaluate, define and manage their expectatives, so that their requirements are met. Customers' demands with reference to a product and/or service change constantly and have an evolution along the time. Hence it is necessary a procedure that allows the organizations anticipate customers' wishes and expectations. Among all the existing tools, I quote two examples as Kano Model of Customer (Consumer) Satisfaction and the satisfaction cycle of the customer's needs and expectatives of virtual formation (AENOR, 2008, p. 7).

The quality is becoming a strategic tool for many organizations that provide services. That fact forces them to make an effective management of services. The introduction and evolution of different models of SQA is one of the axes of this project. A comprehensive analysis of these models, especially those TI services management oriented, has as result a first approach to the best-known alternatives in quality market.

EFQM Excellence model, maturity model CMMI, or ITIL as framework for TI service management are some of the more representative alternatives. ISO/IEC 20000 is the first specific standard for TI service management, although I note the appearance of the standard UNE-EN-ISO 66181:2008, the first standard on virtual formation.

The components of the project scope will be periodically revised for updating based on advances in study areas (formation, languages, quality) from the Thesis project or customers' specific needs.

This first stage is the result of the study of multiple reports from public and private agencies, analysis of cases and experiences. Special mention has the documentation concerning on European Union, projects and policies, which subject is e-Learning.

2.2 Intermediate Stage: Measurement

The starting point of this stage is the reception of the information of the project scope. This information is the result of formation, languages and quality environments study. The product Spanish e-Learning course can be defined as the union of content and services associated to the training action. This course is identified as a unique and unrepeatable training action, a learning experience for each learner.

Khan's e-Learning framework becomes the thread of the project. Khan's eight dimensions will form the components body, both the content and the e-Learning services. Each dimension of this e-Learning framework is discussed in detail along this stage. This way, Khan's dimensions are present in all processes of training action, because they flow transversally through content and services. The list of Khan's framework dimensions is the following (Khan, 2001):

- Pedagogical: teaching and learning needs for e-Learning.

- Technological: technology infrastructure, hardware, and software.
- Interface Design: overall look and feel of e-learning programs.
- Evaluation: assessment of learners, instruction and programs.
- Management: maintenance of learning environment, distribution of information.
- Resource Support: online and technical support.
- Ethical: such as social and cultural diversity, copyright and so on.
- Institutional: administrative matters of education.

The result of this stage is a set of indicators of e-Learning quality. Identifying indicators is the most important step toward improving the e-Learning quality model and predicting the consequences of e-Learning environment changes.

Planning project implies to arrange interviews with different professionals linked to virtual formation and quality, among other areas such as psychology, pedagogy, computer science engineers, etc.

A survey online is needed for covering aspects of e-Learning and e-Learning quality in different organizations. This survey is going to reduce the impact of the quality subjectivity and feed the e-Learning quality model with data of special relevance.

Working papers, attending conferences and papers whose content are related with any field closed to the project, as for example the present document, are going to provide updated information to the project.

2.3 Final Stage: Operation and Monitoring

E-Learning quality indicators are the result of a detailed analysis of the content and services, together with the indicators derived from the success and failure e-Learning factors. These factors will feed the e-Learning quality model directly from the first stage. The study and optimization of all these indicators will allow working with Data Warehouse and/or Data Mining tools.

The stage of feeding the data model consists of inputs of e-Learning quality indicators, as well as the results of the different interviews, surveys and feedback received from various contacts, actions carried out all of them along the intermediate stage.

2.4 Cross Stage: Continuous Improvement

The PDCA (Plan, Do, Check, Act) cycle, also called Cycle of Deming, is a quality tool that helps organizations to implement a continuous improvement oriented approach of their processes. Organizations pursue designing a product or service that meets the customers' needs. This product or service also has to be made without defects, in the shortest possible time and with a minimal use of resources.

The scope project feeds the intermediate stage and generates as result a set of indicators that will be continuously reviewed and will evolve together with the assessment of several training actions.

The project scope will also receive the indicators feedback, as second alternative of continuous improvement cycle.

The indicators of e-Learning quality will allow knowing the starting point of a training action and its evolution over time. These will be optimized by the development of successive training actions and by the inclusion of the information derived from the interviews and the survey online.

A continuous active participation in professional discussion forums, specialized magazines and journals, and so no is needed for getting updated information for feeding the innovative model.

3 RESULTS

Organizations want to achieve their objectives with the delivery of successful e-Learning projects. I hope that the e-Learning quality model meets the current needs of the organizations that make use of the virtual training and becomes a useful tool for the evaluation of their training actions.

The general scheme presented in Figure 4 shows the steps needed for achieving the set of e-Learning quality indicators. Their measurement and operation are the following actions. At this point, note the importance of the continuous improvement philosophy and its application on training actions.

As shown in the Figure 4, the specific quality model for the e-Learning environment is expected to cover lacks concerning the e-Learning quality and suppose a starting point for the development of new quality models, whose scopes could be more ambitious than this one.
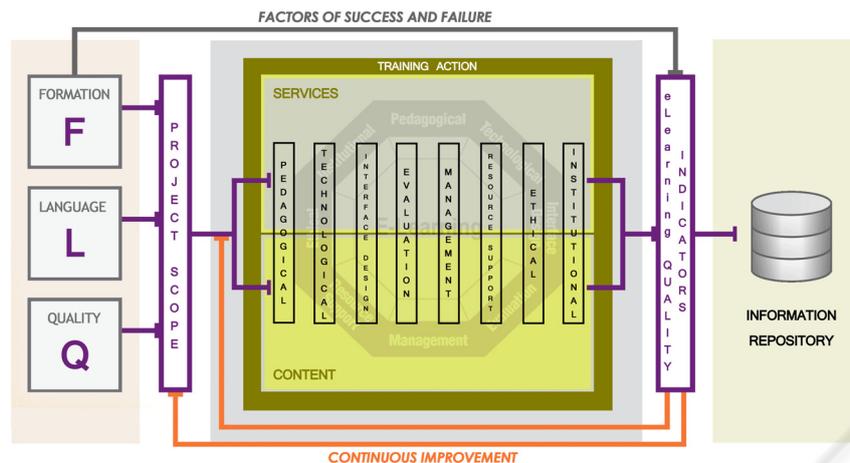
Figure 4: General schema of project stages.

4 DISCUSSION AND CONCLUSIONS

At present I am researching with partial conclusions of the three study areas. The scope of the project is justified on the establishment of effective relationship between formation, languages and quality. Of course, these conclusions are going to evolve, since the first stage of the project is not yet complete.

Studying in depth different training methods I consider that e-Learning has its origin in the Distance Education (DE). The emergence of the Internet and its adaptation to the change of paradigm that has been the emergence of ICT have helped towards what I consider it is a new training model with significance, the e-Learning.

There are a lot definitions for quality provided by multiple authors. I initially understand it as the satisfaction of customer's needs and expectations, and all from a services perspective. The minimisation of quality subjectivity is a critical issue. Thus, tools that reduce the impact of subjectivity levels that could be present in obtaining and evaluating indicators are needed.

Measurement of processes is not a simple task, and more if it is done on services. Often customers' needs and expectations are really different, so their perception of the quality is not the same and is expressed in subjective terms. Indicators are not easy to identify, there is an additional difficulty of moving the customers' subjective feelings to quantifiable indicators. It is necessary to obtain those quantifiable indicators for taking the appropriate measures.

The work done in the first stage of the project on different models, best practices and guidelines, primarily on those marked by its TI orientation, flows into a set of important points in the TI service management that can be part of the project scope and feed the formative action frame.

The proposed framework implies an innovation process that born of the need of introducing a new model of e-Learning quality for Spanish teaching that responds to the e-Learning organizations needs and deals with the management of their services. The distribution of the actions along these three stages is based on this framework.

This project of Doctoral Thesis aims to become a quality model for the Spanish teaching in the e-Learning environment that will provide managers of training actions of a tool that helps them in the e-Learning products and services evaluation.

This model of e-Learning quality should include some benefits as:

- Improving the teaching and learning environments that ensure the acquisition of the competences and skills offered at the beginning of the training action.
- Providing the structured content with an effective and efficient use of the e-Learning standards and technology.
- Tracking of the services management focused on student learning.
- Presence of a continuous improvement cycle that covers the training processes. This cycle acts as a quality tool at the service of the e-Learning quality model.

As Doctoral student, this project that is my Doctoral Thesis is my first research challenge. Within this paper I am trying to explain the importance of getting a new quality e-Learning model. I am working with great motivation for getting the goals and I hope they could be of interest for learning innovation community.

REFERENCES

AENOR, 2008. *Norma UNE-EN-ISO 66181:2008. Gestión de la calidad. Calidad de la Formación Virtual*. Madrid. URL: <http://www.aenor.es>

COM (2002). SEC (2001) 236. *E-Learning: Concebir La Educación Del Futuro*. URL: <http://ec.europa.eu/education/programmes/elearning/sec_2002_236_es.pdf>

COM (2003). SEC (2003) 905. *E-Learning: Designing Tomorrow's Education. A Mid-Term Report*. URL: <http://ec.europa.eu/education/programmes/elearning/doc/mid_term_report_en.pdf>

Dondi, Claudio, 2006. *La calidad del e-Learning. I Jornadas andaluzas sobre calidad del e-Learning*. QUALITAS. Observatorio para la Calidad de e-Learning en Andalucía. Sevilla. <http://prometeo.us.es/qualitas/jornadas/claudio_dondi.pdf>

Ehlers, Ulf D., 2007a. *Towards greater quality literacy in a e-Learning Europe. eLearning Papers. Nº 2. Enero 2007*. URL: <http://www.elearningeuropa.info/files/media/media11559.pdf>

Ehlers, Ulf D., 2007b. *The "e" – Empowering Learners: Myths and Realities in Learner-Orientated e-Learning Quality. eLearning Papers. Nº 2. Enero 2007*. URL: <http://www.elearningeuropa.info/files/media/media11560.pdf>

itSMF International, 2005. *Fundamentos de Gestión de Servicios TI basado en ITIL*. Van Haren Publishing.

itSMF España, 2006. *UNE-ISO/IEC 20000-1. Tecnologías de la Información – Gestión del servicio – Parte 1: Especificación*.

itSMF España, 2006. UNE-ISO/IEC 20000-2. Tecnologías de la Información – Gestión del servicio – Parte 2: Código de prácticas.

Juran, J.M., 1995. *A History of Managing for Quality. The Evolution, Trends, and Future Directions of Managing for Quality*. ASQC Quality Press. Milwaukee (Wisconsin).

Khan, B.H. (Ed.), 2001. *Web-based instruction.* Educational Technology Publications. URL: < http://bookstoread.com/bestseller/khan/tocwbt.htm >

Khan, Badrul. 2001. *A Framework for E-learning, Learning and Training Innovations*. URL: <http://www.elearningmag.com/ltimagazine/article/articleDetail.jsp?id=5163>.

Khan, B.H., 2005. *Managing e-Learning Strategies: Design, Delivery, Implementation and Evaluation*. Information Science Publishing.

Instituto Cervantes (2002). *Marco Común Europeo de Referencia para las lenguas: Aprendizaje, Enseñanza, Evaluación*. URL: <http://www.cvc.cervantes.es/obref/marco/cvc_mer.pdf>