An Overview of the Most Important Aspects Related to Quality Assurance in Computer Supported Collaborative E-Learning

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Abstract
Collaborative learning is defined by Dillenbourg as a situation in which two or more people learn or attempt to learn something together (Dillenbourg, 1999). Information technology has developed to a stage where any organization of higher education can no longer ignore it. In fact, information technology has become part of everyday life for teachers and students. The use of information technology in an E-Learning environment, in order to mediate and support interaction, tasks, knowledge acquisition and finally the educational process itself has lead to a new concept called Computer Supported Collaborative Learning. Customers (students) expectations are high, therefore, quality assurance should lies in any activities of higher education organizations. This paper is presenting the most important aspects related to quality assurance in Computer Supported Collaborative E-Learning environments, as well as is presenting an overview of the quality importance in such learning environments, the quality role, the main quality elements, and some of the trends and perspectives at European level as resulted from available studies.

Keywords: Collaborative E-Learning, E-Learning, Quality Assurance

Introduction
The explosion of Information and Communication (ICT) since the 1990s has brought about profound changes in the way society is organized and functions. With all these changes that affect the way we live and work, it is not surprising that learning has not escaped the phenomenon. While distance education and learning is not new the possibilities of ICT have generated potential uses and means of organization that enhance and accelerate the distance learning process (Eschenlohr et al, Qual E-learning Project, 2004).

Learning supported by computers is very much in vogue today as more and more organizations have adopted different E-Learning programs for various purposes (education, training, instruction etc.). The concept itself has been defined in many ways and developed on various directions. We are talking today about computer based learning or computer based training or computer supported collaborative E-Learning or even about technology enhanced learning.

Regardless the E-Learning services approach adopted by a higher organization, in the current higher education environment and taking in discussion the proliferation of E-Learning providers, it is inevitable for higher education organizations to demonstrate the quality of their educational programs in a manner that is sufficient intelligible to their direct clients (the students) as well as to their indirect clients (state and private business sectors).

Computer Supported Collaborative E-Learning (CSCEL)
Collaborative learning has been defined as a situation in which two or more people learn or attempt to learn something together (Dillenbourg, 1999; Wikipedia, accessed August 2011).
Unlike individual learning, people engaged in collaborative learning capitalize on one another’s resources and skills, asking one another for information, evaluating one another’s ideas, monitoring one another’s work, etc. (Chiu, 2000; Chiu, 2008; Wikipedia, accessed August 2011). More specifically, collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles (Mitnik et al, 2009; Wikipedia, accessed August 2011).

Put differently, collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual depends on and is accountable to each other. These include both face-to-face conversations (Chiu, 2008; Wikipedia, accessed August 2011) and computer discussions (online forums, chat rooms, etc.) (Chen and Chew, 2008; Wikipedia, accessed August 2011). Methods for examining collaborative learning processes include conversation analysis and statistical discourse analysis (Chiu and Khoo, 2005; Wikipedia, accessed August 2011).

Often, collaborative learning is used as an umbrella term for a variety of approaches in education that involve joint intellectual effort by students or students and teachers (Smith and MacGregor, 1992; Wikipedia, accessed August 2011). Thus, collaborative learning is commonly illustrated when groups of students work together to search for understanding, meaning, or solutions or to create an artifact or product of their learning. Further, collaborative learning redefines traditional student-teacher relationship in the classroom which results in controversy over whether this paradigm is more beneficial than harmful (Chiu, 2004; Harding-Smith, 1993; Wikipedia, accessed August 2011). Collaborative learning activities can include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities. The approach is closely related to cooperative learning.

Computer-Supported Collaborative E-Learning (CSCEL) is a relatively new educational paradigm within collaborative learning which uses technology in a learning environment to help mediate and support group interactions in a collaborative learning context (Mitnik et al, 2009; Chen and Chew, 2008; Wikipedia, accessed August 2011). CSCEL systems use technology to control and monitor interactions, to regulate tasks, rules, and roles, and to mediate the acquisition of new knowledge (Mitnik et al, 2009; Wikipedia, accessed August 2011). Researchers and practitioners in several fields, including cognitive sciences, sociology, computer engineering have begun to investigate CSCEL, thus, it constitutes a new trans-disciplinary field (Wikipedia, accessed August 2011).

CSCEL is a pedagogical approach wherein learning takes place via social interaction using a computer or through the Internet. This kind of learning is characterized by the sharing and construction of knowledge among participants using technology as their primary means of communication or as a common resource (Stahl et al, 2006; Wikipedia, accessed August 2011). CSCEL can be implemented in online and classroom learning environments and can take place synchronously or asynchronously.

![Figure 1. General schematic model for CSCEL (Dobre, 2011)](image-url)
In figure 1 the author is presenting a general schematic model for CSCEL, showing the interaction between teachers-students-technology.

Lambropoulos et al have proposed a pedagogical model (figure 2) for E-Learning design with applicability in CSCEL, the model being scripted in six distinct phases, considering as well the activities before and after de e-course (Lambropoulos et al, 2011).

![Figure 2. The Pedagogical Model for E-learning design](Lambropoulos et al, 2011)

Figure 2 suggests the need for different teaching and learning styles. The teacher adopts initially an instructional approach and move to the role of orchestrating the activities. The student considers adapting to four different learning styles occurring simultaneously, instructional, collaborative and self-directed and vicarious learning. The teacher role is a combination of expert, observer, intervener and overall conductor. In this way there is a matching of organisation and knowledge convergence (Lambropoulos et al, 2011).

Quality Assurance and CSCEL
The Quality Assurance Agency from UK describes quality assurance as “the means through which an institution ensures and confirms that the conditions are in place for students to achieve the standards set by it or by another awarding body” (QAA, 2004; Evidence Net & PBWorks, accessed August 2011).

Other researchers (Auvinen and Peltonen, 2004) consider that the quality in education can be defined from at least three points of view: from a technological, an economic or a pedagogical perspective. The pedagogical approach focuses on enhancing the processes of learning and the interaction between the learner and the learning environment (Auvinen and Peltonen, 2004).

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Regarding quality in education, three different dimensions were distinguished by Auvinen and Peltonen:
- different understandings of quality within a stakeholder group;
- the perspectives of different stakeholder groups (e.g. students, teachers, institutions, employers of graduates, governments);
- different standards of quality can be applied to measure achievement at different levels of education (schools and universities have different objectives).
The European dimension of E-Learning adds even more complexity to this question. Different educational systems, learning cultures, learner preferences and other national or regional characteristics have developed different standards of quality management and quality assurance (Auvinen and Peltonen, 2004). However, the researcher’s opinions are different from the viewpoint of having or not having a unique valid concept of quality in learning and consequently a single uniform approach. For sure, a solution will be identified and implemented.

Beside these differences in approaching or not a unique quality assurance system remains the final goal: clients’ satisfaction. High level of clients’ satisfaction will prove the effectiveness of a specific learning system. Looking to CSCEL and quality assurance requirements, the three principles of effective online pedagogy postulated by Pelz could be applied to CSCEL as well. The Pelz’s principles are (Pelz, 2004; Auvinen and Peltonen, 2004):

- *Let the students do (most of) the work.* The more time students spend effectively engaged in content, the more of that content they learn. This is the constructivist view of learning;
- *Interactivity is the heart and soul of effective asynchronous learning.* This is the most important element that E-Learning can contribute to effective communication;
- *Strive for presence.* Recent research in the field of E-Learning suggests that discussion responses that add value to a discussion fall into one or more of three categories: social presence, cognitive presence, or teaching presence. This concerns both the teacher and the students.

There is a growing consensus that high quality teaching is not just about high quality presentation of the content or just about high quality teaching skills. High quality teaching is fundamentally about offering a context in which high quality learning is possible and is encouraged (Auvinen and Peltonen, 2004; Martens & Prosser, 1998). The focus should be on the process rather than on the outcomes (Auvinen and Peltonen, 2004).

Two main directions have been adopted by the higher education organizations in the past years, one called *quality assurance* and another one called *quality enhancement*. Researchers, specialists, higher education organizations, associations, agencies etc., have sustained a direction or another. According to Mellar and Jara, the complex institutional context in which are located the E-Learning environments, impact on the application of the quality assurance mechanism and also, the trend is to move from a quality assurance approach to quality enhancement one (Mellar and Jara, 2009).

The quality of CSCEL has been measured through key performance indicators and standard process measurements. According to Auvinen and Peltonen, the economic approach treats the learner like a customer. But this view opposes the pedagogical learner concept. A learning process is not something that is delivered to a learner by an E-Learning provider but rather a process of co-production between the learner and the learning arrangement (Auvinen and Peltonen, 2004).

Zhao suggests a framework that provides ways of measuring and enhancing the quality of online higher education (Zhao, 2003; Auvinen and Peltonen, 2004), as follows:

- *Course effectiveness.* Even the most dazzling technology has no value unless it supports content that meets the needs of learners;
- *Adequacy of access in terms of technological infrastructure.* Shortcomings in technology and access seem to cause most of the problems faced by online students;
- *Student satisfaction.* Student satisfaction concerns satisfaction with course quality, with instructor interaction and peer collaboration, and with support services. Both asynchronous and synchronous interactions between students and instructors and amongst students are pivotal in virtual classrooms and online learning. Studies show that timely feedback and mentor support are vital to learning success from the point of view of instructors as well as peers;
• **Academic satisfaction.** Academic satisfaction means that teaching staff find online teaching effective and professionally rewarding. In many respects, teaching online is not the same as conventional face-to-face teaching in terms of changes to pedagogy and intensive adoption of ICT in teaching.

Quality Assurance Agency for Higher Education (QAA), European Quality Observatory (EQO), NCC Education and many other professional bodies have published during the past decade important studies showing an proving the importance of quality assurance in online environments. Is sufficient to mention here the EQO study “Quality in e-learning” (Ehlers et al, 2005), a study looking to reveal the current and future challenges of quality and standardisation of E-Learning in Europe. One of the EQO study result was the development of a standardised process model which was developed to act as a reference model for comparing and describing process-orientated quality concepts (Ehlers et al, 2005). Figure 3 shows the seven processes and all component sub-processes of the model proposed by the authors of the EQO study (Ehlers et al, 2005).

![Figure 3. Processes and sub-processes of the reference framework for the description of quality approaches (Ehlers et al, 2005)](image)

**Conclusions**

The author considers that the higher education organizations need to prove a high commitment to quality measurement for CSCEL environments in order to assure all their clients about the educational process success. Such engagement can be driven through self-assessments carried out by each department from a higher organization as well as through an overall self-assessment at organization level. The higher education organizations will continue to move ahead in reference to CSCEL delivery but also they need to focus from strategically viewpoint on the enhancement of their quality management systems and the author considers that the Ehlers et al model could be considered for CSCEL as well. Nevertheless, concerns in terms of CSCEL efficiency have been reported but as soon as will be identified appropriate quality methods close to the particular characteristics of educational process and as soon as these methods will be implemented properly the concerns will disappear.

One very important condition will be not to neglect the quality of the educational process. The author is considering future research work of the quality assurance/enhancement in CSCEL as the quality is playing a key role in the success of CSCEL.
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