

E-Learning Design Quality

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BACKGROUND

A critical review of the literature was conducted which resulted in the formulation of an e-learning research agenda with a focus on quality and e-learning design issues. The e-learning research agenda summarizes the most commonly identifiable research dimensions regarding e-learning design that influence e-learning quality. It includes issues such as:

- Implementation of learner-centered design paradigms (Hsi & Soloway, 1998; Norman & Spohrer, 1996; Soloway, Guzdial, & Hay, 1994). Human-computer interaction and human factors researchers as well as cognitive scientists have been actively involved in this strand of research.
- Implementation of effective pedagogy for the design of e-learning courses and the subsequent development of instructional design guidelines (Clark, 2002; Dimitrova & Sutcliffe, 1999; Govindasamy, 2002; Weston, Gandell, McApline, & Filkenstein, 1999). Furthermore, effective pedagogy includes investigation and incorporation of cognitive methods (such as learning styles and strategies, problem solving, metacognition, etc.) and research in the development of new instructional design models (Alavi & Leidner, 2001; Clark, 2002; Clark & Mayer, 2003). Researchers from Educational Psychology and Instructional Design have been researching such issues.
- Guidelines and frameworks for quality assurance and evaluation (Barbera, 2004; Boud & Prosser, 2001; Johnson & Aragon, 2002; McGorry, 2003; Sonwalkar, 2002). This strand of research transects the aforementioned two dimensions and can be considered an umbrella for e-learning developments.

Learner-Centered Design

Soloway et al. (1994) were the first to identify the need for designing learner-centered courses and technologies that will address users as learners. They pointed out the need for the learner-centered design (LCD) paradigm as the equivalent approach of user-centered design (or human-centered design). User-centered design (UCD) is a philosophy and a process. It is a philosophy that places the users at the center (Norman & Draper, 1986); it is a process that focuses on cognitive factors (such as perception, memory, learning, problem-solving, etc.) as they come into play during users' interactions with software.

The goal for LCD is to design software that “make people more effective learners,” that make them want to learn and know how to learn beyond the computer task at hand. It was supported that learners should be put at the center of the design process along four dimensions: (a) understanding (for the learner) is the goal, (b) motivation is the basis, (c) diversity of learners is the norm, and (d) learners' growth is the challenge (Soloway et al., 1994).

Norman and Spohrer (1996) combine learner-centered approach with the latest developments in learning theories: learners are motivated to seek out new knowledge when they confront real problems at hand; the goal is active exploration, construction, and learning, and not the passivity of the lecture attendance and textbook reading. Norman and Spohrer (1996) focused their analysis on three dimensions of instruction: (a) engagement, which is tightly associated with *motivation*; (b) the provision of rapid compelling interaction and feedback help make learners motivated and engaged; and (c) effectiveness, referring to whether learners achieved their learning goals and viability, which includes the issue of scalability regarding the technological infrastructure (authoring tools, design

tools, component software standards, etc.) as well as the social and cultural context of use (integration into existing learning/training activities etc).

Focus on Learners' Psychological Processes

Alavi and Leidner (2001) stress the need for future research to focus on the interactions between technology, instructional methods, and psychological processes of the learners. They state that studies examining the internal psychological processes, through which learning occurs, are missing. Psychological processes refer to states within the learner that are involved in learning, such as learner's cognitive and information processing activities, cognitive structures (memory), and *affective* states.

Concerning the latter, the importance of *affective factors and motivation* in learning has been extensively reported in educational psychology literature. McCombs (2001) focused on what is known about learners, and learning both inside and outside formal educational settings. Her work calls for educational models that reconnect youth and adults; models that are person-centered, while also providing challenging learning experiences that prepare children and adults to be knowledge producers, knowledge users. McCombs (2001) stresses the importance of identification of learners' individual differences and needs, and proposes a learner-centered framework. The proposed framework strongly relies on 14 learner-centered principles (APA, 1997). Motivational and affective factors have a prominent place in this framework.

Martinez (2001) has also carried out research in e-learning and devised a model of learning orientations which recognizes a dominant influence of emotions, intentions, and social factors on how individuals learn differently. The above studies are in accordance with latest thinking regarding effective pedagogy for e-learning design; such thinking takes a *holistic view* integrating cognitive and affective factors in order to enhance e-learning design (O'Regan, 2003).

E-Learning Quality Evaluation

The main requirement for putting the learner at the center is also evident in research studies that deal with the issue of quality assurance and evaluation.

Some studies investigate issues of quality in the virtual learning environment ranging from management and institutional processes to design-level issues (Barbera, 2004; Pond, 2002), others explore issues of quality that affect design of e-learning courses and technologies (Boud & Prosser, 2001; Johnson & Aragon, 2002), while some others deal with the issue of quality evaluation and measurement (McGorry, 2003; Sonwalkar, 2002). Despite the increasing interest in the issue of quality of e-learning, there are very few studies that empirically address quality of e-learning courses and/or technologies.

Pond (2002) examines the issue of quality assurance and accreditation, and supports that e-learning poses great challenges to redefine quality and its evaluation. Belanger and Jordan (2000) also mentioned quality assurance as one of the major disadvantages of e-learning in its current form and *further note the lack of quality control*. Pond (2002) stresses the need for a more learner-centered evaluation of quality; he further asserts that "a quality education is one in which the learner's expectations for his or her learning are met or exceeded" (p. 190).

Barbera (2004) examines quality in virtual learning environments in the context of educational institutions and supports that rush of educational institutions to offer e-learning courses for distance education raises some very interesting issues concerning their quality. Barbera continues with her critique, stating that from an educational point of view, virtual learning environments are failing to meet a number of promises made that deal with the *prevalence of technological and aesthetic criteria over educational ones*, and the confusion between the mere supply of information and actual knowledge-building or training processes. It can be supported that *focus is on technological and not on pedagogical considerations while designing these e-learning environments and/or courses*. In the same vein, under the auspices of SIG-CHI (2001), it has been reported that there is a need to focus on how to design useful and usable learning environments and courses since, the focus so far is more on the technological and not on the pedagogical aspects. The above requirements confirm the necessity of a learner-centered approach. It can be seen from the above research findings that:

- a) Learners and their characteristics are the main focal point in e-learning design.

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