User-centered design (UCD) has gained popularity as online learning has been attracting the interest in both the educational and business sector. This is due to the fact that UCD sheds light on the entire process of planning, designing, developing, and evaluating computer-based learning.

To now, this process is divided into parts, and different groups of stakeholders work in their areas of specialization. The result is environments where, technically, all parts exist; however, there are areas that are vague, missing, or do not work and create boredom and fatigue to the learners. Thus, the problem is not only connected to the technologies used in online learning, but also it is a decision-making problem, distributing responsibility for failure and success to all stakeholders.

User-Centered Design: Focus on Users/Learners

A problem indicates its own solution or at least the context for solutions. As such, human-computer interaction (HCI) by definition fits planning and design to its purpose of use. This is because HCI is an interdisciplinary area concerned with the analysis, design, and evaluation of interactive computing systems for human use and with the study of major phenomena surrounding them (ACM SIGCHI, 1992). Furthermore, HCI pioneers seemed to adopt a learning summit on using the machine for the “augmentation of human intellect” (Engelbart, 1962). User-centered design proposes that the designers need to enable human capabilities (Shackel, 1991). Norman (1986) stressed that the purpose of a UCD system is to serve the user. The users/learners’ needs should dominate the design of the interface, and the needs of
the interface should dominate the design of the rest of the system. The importance of following the social turn in learning technology with Vygotsky (1978) and Lave and Wenger (1991) was apparent in computer-supported collaborative learning (CSCL) and networked learning. However, UCD in education is still related to easy-to-use (usability) issues, without integrating the learning and social parameters in analysis, design, and evaluation.

Learning tools appeared to enhance the social character of learning, most of the times having astonishing results in controlled environments such as laboratories and case studies. In the real world, the repetition of the same interface pattern is found in widely used socio-based learning environments. This is due to the fact that alignment between all stakeholders’ needs and visions is still missing. The physical and conceptual distance between all groups participating in learning, as well as the distance between the ‘ideal’ environment provided by the theories and what is really happening in learning environments, makes it difficult to provide adequate solutions as adequate descriptions of the processes are still missing. Even though technology changed the way we work, learn, and entertain ourselves, we still live outside the control rooms.

**Description of Chapters**

This edition aims to illuminate aspects of online learning communities’ reality by employing methodologies that achieve gaining a better understanding of the users/learners. A UCD approach focuses on the description and understanding the needs and visions of the users as learners for analysis, design, and evaluation. Thus, our book is structured in four broad areas: Section I introduces UCD and identifies the problem of quality in online learning communities. Section II refers to analysis and design, and Section III presents case studies, as well as evaluation of online learning communities.

The book includes 16 chapters from prominent international collaborating authors from Australia, China, Greece, Ireland, Iceland, Japan, Poland, Switzerland, Taiwan, the United Kingdom, and the United States.

The following section presents an overview of each chapter.
In Chapter I, Lambropoulos introduces user-centered design and its basic concepts associated with online learning communities. Another aim is to search for guidelines to ensure quality in online learning. Seven guidelines for experts’ evaluation are proposed as signposts to ensure quality: intention, information, interactivity, real-time evaluation, visibility, control, and support.

In Chapter II, Schwier and Daniel employ a variety of user-centered evaluation approaches to examine methods for determining whether a community exists, and if it does, to isolate and understand interactions among its constituent elements, and ultimately to build a model of formal virtual learning communities. This chapter presents multiple methods for identifying a community and its constituent elements in formal online learning environments.

In Chapter III, Daniel, O’Brien, and Sarkar examine current research on online learning communities aiming to identify user-centered design principles critical to the emergence and sustainability of distributed communities of practice. The investigation aims to improve awareness, research, and sharing data and knowledge in the field of governance and international development. It argues that the sociotechnical research program offers useable insights on questions of constructability, performance, and sustainability. The authors conclude with a framework of principles to support the construction and deployment of online learning communities.

In Chapter IV, Law and Hvannberg search for quality models on exploration, evaluation, and exploitation of online community systems. Their review includes: (a) review of key theoretical models underpinning the design, (b) identification and evaluation of quality models, (c) an understanding of the importance of the feedback loop between evaluation redesign, and (d) the development of a generic framework for user interface quality models which comprises the four levels of factors, criteria, guidelines, and metrics.

In Chapter V, Mowbray designs online learning communities to encourage participation and discourage uncooperative or antisocial behavior. She touches on aspects of the governance, social structure, moderation practices, and technical architecture
of online learning communities. The first half of the chapter discusses why people behave antisocially in online learning communities, and ways to discourage this through design. The second half discusses why people behave cooperatively in online learning communities, and ways to encourage this through user-centered design, applying some results of experiments in social psychology.

In Chapter VI, Newman, Barbanell, and Falco document online users’ interactions in videoconferencing communities. Working on a multi-year national program, the authors investigated and developed multiple methods by which videoconferencing could be used to expand PK-12 educational communities. They identify four major types of videoconferencing communities, and common patterns within each that help to support effective use of the process. The authors also examine the nature and structure of these videoconferencing communities, provide examples of successful use, summarize key user variables that impact on the process, and make recommendations for methods applied when studying videoconferencing communities.

In Chapter VII, Jelfs, Harvey, and Jones provide results from a study on communities of practice and their implementation on the development of two blended communities supporting a portal for science teachers in Ireland and Bulgaria. They discuss the communities in relation to recognized criteria and features that may be conducive to the success of small communities, and specifically online communities, and how these relate to the different stages of resource development. Sociotechnical findings indicate the need to blend the face-to-face meetings with electronic communications. The role of a key respected teacher/educator was also a pivotal feature in gaining the trust and respect of other participants at an initial stage.

In Chapter VIII, McNaught, Cheng, and Lam present evidence-based criteria for the design and use of online forums in higher education in Hong Kong anchored in the evaluation of 13 educational online forums. The study provides empirical data across multiple online forum experiences to better inform the pedagogy of using online forums. They propose three key factors that tend to affect forum success: ease of use, clear facilitation, and motivation to engage. The centrality of the role of the teacher was confirmed.

Section III: Evaluation and Case Studies

In Chapter IX, Bell, Zaitseva, and Zakrzewska stress the importance of evaluation as a link in the chain of sustainability. Models, based on the literature, were used to analyze and support the design and evaluation on the EU-funded project for Collaboration Across Borders (CAB). They present a case study of the development of the CAB community and offer practical advice for developing online learning communities.

In Chapter X, Rigou, Sirmakessis, Stavrinoudis, and Xenos review tools and methods for supporting online learning communities and their evaluation. The authors de-
scribe types and core functionalities, and suggest a set of general purpose evaluation methods suitable for assessing quality aspects of these tools, along with a method for the statistical analysis of the derived data.

In Chapter XI, Laghos and Zaphiris evaluated attitudes towards thinking and learning in a computer-aided language learning Web site via computer-mediated communication (CMC). The authors provide an overview of the models and frameworks available that are being used for analyzing CMC in e-learning environments. The significance of the proposed presentation is that it aims to provide the reader with up-to-date information regarding these methods, and based on the advantages and disadvantages of each of the CMC analysis methods, suggestions are applied to a characteristic scenario in e-learning.

In Chapter XII, Hartnell-Young, McGuinness, and Cuttance describe the analysis, design, development, and evaluation of Australia’s National Quality Schooling Framework (NQSF), created particularly for teachers and others involved in improving school education. Funded by the Australian government, NQSF was developed as a means of building and testing knowledge. The authors, using Wenger’s framework for communities of practice, evaluated the NQSF in light of its capacity for engagement, imagination, and alignment. The authors provide meaningful insights regarding engagement, shared purpose, as well as responsibility between the stakeholders.

Chapter XIII, Nguyen-Ngoc, Rekik, and Gillet present a model for the evaluation of Web-based experimentation environments based on an iterative paradigm. They integrate different analysis methods including quantitative and qualitative analysis, and Social Network Analysis. The approach is illustrated with the iterative user-centered design and development of the eMersion environment carried out at the Ecole Polytechnique Fédérale de Lausanne between 2002 and 2005. The authors investigate issues on participation, flexibility, learning performance, collaboration, and community social structure.

In Chapter XIV, Prammamane presents a study of online interaction based on identifications of users’ needs. He implemented successfully Hillman et al. and Moore’s four types of interaction and Henri’s analytical model as a framework to guide the investigation in order to understand the nature of interaction in an online course. The author provides recommendations and practices for designing and delivering online courses effectively.

In Chapter XV, Brook and Oliver explore the influence of instructor actions on learning communities’ development in online settings. They used their Learning Community Development Model to guide a multi-case study and measured the individuals’ community experience using the Sense of Community Index supported by observations and open-ended questions.

In Chapter XVI, Mochizuki and his colleagues from different universities in Japan, working from a multiple-perspective framework, studied the promotion of self-
assessment in collaborative discussion using visualization software. The authors developed and evaluated self-assessment using a software program in order to visualize the discussion on a bulletin board system. The software, referred to as the “Bulletin board enrollee envisioner” (i-Bee), can visually display the co-occurrence relation between keywords and learners, as well as the recent level of participation of each learner and the frequency of the learner’s use of each keyword. The authors provide results on this study regarding students’ self-assessment and reflection, as well effectiveness on learning community sustainability.

References


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