

# Chapter 2.35

## User-Centered Design Principles for Online Learning Communities: A Sociotechnical Approach for the Design of a Distributed Community of Practice

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### **ABSTRACT**

This chapter examines current research on online learning communities (OLCs), with the aim of identifying user-centered design (UCD) principles critical to the emergence and sustainability of distributed communities of practice (DCoPs), a kind of OLC. This research synthesis is motivated by the authors' involvement in constructing a DCoP dedicated to improving 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. Its attention in particular to participatory design and human-computer interaction are germane to designing user-centered online learning communities. Aside from these insights, research has yet to probe in any systematic fashion the factors affecting the performance and sustainability of DCoP. The chapter concludes with a discussion of UCD principles for online learning community to support the construction and deployment of online learning communities.

## INTRODUCTION

Increasingly, distributed communities of practice (DCoPs) are attracting attention for their potential to enhance learning, to facilitate information exchange, and to stimulate knowledge creation across cultural, geographical, and organizational boundaries. Research shows the utility of DCoP on their members is positive (Daniel, Sarkar, & O'Brien, 2004a; Daniel, Poon, & Sarkar, 2005; Schwier & Daniel, Chapter II, this volume). Their allure aside, experience indicates that they may not emerge or flourish even in the presence of demand from users. In fact the process of constructing DCoP is not well understood, and factors influencing sustainability merit further research attention.

This chapter introduces the authors' involvement in the development of a DCoP. The DCoP in question is the Governance Knowledge Network (GKN). This project began in 2001 with the aim of assessing the interest of academics and practitioners in Canada to develop an online learning community (OLC) for systematizing the exchange of information at the intersection of governance and international development (Daniel et al., 2004a). The surveys of key Canadian stakeholders in the project indicated considerable data existed, and recommended the proposed GKN to: actively engage in dissemination and archiving of data not widely accessible in the public sphere, profile community members, promote social network building and collaboration, and inform members of current events and opportunities.

Following the identification of the demand and interest, the second stage of our research involved the development of a GKN prototype. In this uncharted course, we were guided by enabling technology and other DCoP models (World Bank, UNDP).<sup>1</sup> We also turned to research to inform our efforts on how to effectively sustain the project. Our synthesis of research in the area identified promising insights from studies we refer to as the sociotechnical approach. As applied to DCoP,

the sociotechnical approach aims at understanding people's interaction with technology and the ensuing communication, feedback, and control mechanisms necessary for people to take ownership of the design and implementation process.

This chapter focuses on this interaction, as it is germane to the development and sustainability of the GKN, in particular, and DCoP more generally. The chapter is divided into the following sections. The next section outlines relevant research on DCoPs and the sociotechnical approach. We next provide an overview of the GKN OLC project and present key results from the research that informed the design of the GKN. A discussion of various human and technology elements we consider critical to the initiation, development, growth, and sustainability of the GKN follows, and in the next section, we revisit the key human and technology design issues. Finally, we conclude the chapter and present UCD principles for OLCs drawn from the sociotechnical approach.

## RELATED WORK

Daniel, Schwier, and McCalla (2003b) observe that online learning communities have attracted diverse disciplinary interest, but that it is possible to identify two dominant perspectives—technological determinism and social constructivism. The basic tenet of the technology determinism research is that technology shapes cultural values, social structure, and knowledge. In technology-related fields, such as computer science and information systems, significant attention has been given to understanding technological developments and how these changes influence social structures.

The social constructivism perspective, on the other hand, posits that knowledge and world views are created through social interaction. Social constructivism theories have inspired research on knowledge construction within communities of practice. Lave and Wenger (1991) assert that a society's practical knowledge is situated in

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