Chapter IV

Web-Based Interface Elements in Team Interaction and Learning: Theoretical and Empirical Analysis

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Abstract

As an important avenue of the learning community, the Web has enabled interaction among learners and facilitated learning processes. This chapter posits that a well-designed user interface will capably address limitations of Web-based learning, and enhance team interactions and learning outcomes. It reports on an experiment that investigated the effect of interface elements on a set of interaction processes, attitudes, and learning outcomes. Availability of interface elements to engage and evaluate learning was found to promote participation, trust, and cooperation among learners. These process variables, as intervened by attitudinal factors, had significant impacts on outcome variables. Our findings provide support to a theoretical model.
that causally links four sets of variables: input (interface elements), processes, attitudes, and learning outcomes. The chapter expounds on the implications of the findings, which have significant importance with respect to the emerging issues in Web-based learning.

Introduction

Web-mediated learning takes many forms, of which the emerging concept of virtual learning deserves intense research attention. Virtual learning environments are “open systems that allow for participant interaction through synchronous or asynchronous electronic communication” (Piccoli, Ahmad, & Ives, 2001, p. 409). The need to gain greater understanding of the role of Web-based systems has led to the convergence of several fields of research toward a broader scope of information systems; some examples include educational psychology, communication, and social psychology. This chapter focuses on Web-based teams in virtual learning environments. The Web has increasingly become an important avenue of the learning community, and sometimes a learner’s sole interface with other team members. It can augment communication among instructors and learners by making interactions more accessible and continuous throughout the learning process. With the advent of networked technologies such as asynchronous learning networks (Hiltz, Coppola, Rotter, & Turoff, 2000), Web-based learning is a unique combination of temporal and spatial independent activities that will result in new pedagogical paradigms.

Learning is fundamentally a function of the context, activity, and culture in which it occurs. Yet, most technological systems are generally opaque to social information. The new collaborative learning paradigm should ideally incorporate different configurations that restructure knowledge to meet the new academic demands. Research should not only focus on the technological systems, but also the socially based process of learning appropriation. This includes the opportunity for interactive processes to construct and maintain mutual understanding (Alavi, Wheeler, & Valacich, 1995). The characteristics of face-to-face communication change remarkably when we move into cyberspace interaction. Unlike traditional learning models, the Web lacks certain aspects such as physical interaction among learners. User interface with essential elements can potentially overcome some limitations of Web-based learning by engaging learners in their learning process. While studies have investigated the patterns of the use of Web-mediated systems (Kraut, Mukhopadhyay, Szczypula, Kiesler, & Scherlis, 1998), they do not address the processes through which teams make sense of their learning experiences.

Web-based activities may be increasing at a phenomenal rate, but research on Web-based teams lags behind. Despite the growth of Web-based systems, there
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