

Using a cognition-motivation-control view to assess the adoption intention for Web-based learning

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Received 24 February 2006; received in revised form 10 May 2006; accepted 20 June 2006

Abstract

People expect Web technology to facilitate learning, particularly in higher education. A key issue involves the factors motivating the adoption of the Web for learning. Drawing upon social cognitive theory (SCT) and the theory of planned behavior (TPB), this study adopts a cognition-motivation-control view to assess learner adoption intentions for Web-based learning. The proposed model is validated by surveying 319 undergraduate students who had enrolled in Web-based courses and attended a 12-hour training program on using a Web-based system for academic learning. The empirical findings identified that efficacy control and efficacy expectations can be used to guide learner adaptation learning behaviors on the Web. The limitations of this study are discussed and future research directions suggested.

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Keywords: Cognition-motivation-control view; Social cognitive theory (SCT); Theory of planned behavior (TPB); Web-based learning

1. Introduction

The Internet has changed the higher education learning environment during the past decade (Ives & Jarvenpaa, 1996). For instance, students can now access academic papers via digital libraries, discuss projects with advisors by e-mail and attend Web-based courses at home. The application of Web technology in higher education has influenced learning behavior, such as by providing an effective learning environment that encourages more active participation, offering opportunities for responsive feedback and individual involvement, and promoting teamwork through collaborative learning (Gilliver, Randall, & Pok, 1998). The transformation from traditional classrooms to Web-based learning environments has changed learning styles and interactions between instructors and students (Agres, Edberg, & Iqbaria, 1998). Notably, Web technology enables students to communicate electronically and attend courses online. Moreover, trainers can work in cyberspace to improve educational inputs, process, and outcomes (Wachter, Gupta, & Quaddus, 2000). To summarize, the growth of Web applications has made the Web an important educational medium (Siau, Nah, & Teng, 2002).

This study considers ‘Web-based learning’ to be a *goal-directed behavior through which human agents acquire and share information or knowledge via the Web for enhancing personal capacity to take effective actions*

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(Kim, 1993). Web-based learning thus is a goal-directed human behavior underlying community networks that sustain interaction among students, instructors, and Web-based systems (Hiltz & Wellman, 1997). The literature has identified the usefulness and ease of use of Web-based systems for learning (Ngai, Poon, & Chan, *in press*; Selim, 2003). However, overemphasizing the effectiveness of Web-based systems may ignore the cognitive processes of learners in their adaptation learning behavior (Lee, 2001). As a result, the mechanism used by human agents to respond to Web-based learning environments was lacking and still needs to be addressed.

Unlike learning in traditional classrooms, Web-based learning presents learners with a new environment, one which they may either accept or reject depending on their adaptation of the learning process (Lee, 2001). Whether human agents can learn more effectively in Web-based learning environments compared to traditional classrooms depends on how the evolution of community networks can sustain collaboration, develop trust between students and instructors, and encourage active participation in student–instructor interaction (Bruckman, 2002; Hiltz & Turoff, 2002). Web-based learning on campus is considered an adaptation learning behavior with respect to cognitive interaction among students, instructors, and Web-based systems. Exploring perceptual processes of Web-based learning facilitates this study to develop a research model to examine what leads learners to be likely to accept Web-based systems for learning. The proposed research model is based on the learner perspective and will be helpful to educational institutions when they attempt to develop and deliver Web-based courses and encourage student participation in Web-based learning.

2. Research model

Belief–attitude–intention chains provide a useful theoretical basis for developing behavioral models to explain goal-directed human behavior (Fishbein & Ajzen, 1975), such as Web-based system adoption behavior. A well-known learning model based on the cognition-motivation view, namely social cognitive theory (SCT) as proposed by Bandura (1977, 1978, 1982, 1986), has been widely applied to explain goal-directed human behavior. Many previous studies have applied SCT to examine the determinants of computer usage or performance (Compeau & Higgins, 1991, 1995a; Compeau, Higgins, & Huff, 1999; Johnson & Marakas, 2000). Another widespread model based on the cognition-control view, the theory of planned behavior (TPB) proposed by Ajzen (1985, 1991), has also been successfully applied to explain goal-directed human behavior (Taylor & Todd, 1995).

As noted by Piccoli, Ahmad, and Ives (2001), efficacy in terms of personal abilities can enhance active participation in virtual learning environments, expectations regarding personal goals help participants develop learning strategies, and control of technology use can encourage communication and interaction among participants. Thus, Web-based learning is an adaptive learning process governed by the personal cognition, motivation, and control of behavioral efficacy. Integrating the cognition-motivation (Bandura, 1978; Compeau & Higgins, 1995a) and cognition-control views (Ajzen, 1985, 1991) to suit belief–attitude–intention chains, this study summarizes three critical beliefs stemming from learner perceptual processes of Web-based learning. The first belief, self-efficacy, is a cognitive factor referring to individual self-assessments regarding personal confidence or ability to use the Web for learning. Moreover, the second belief, personal outcome expectations, is a motivational factor that produces a long-term effect on the adaptation learning process and can be used to assess individual expectations underlying social values and norms. Meanwhile, the third belief, perceived behavioral control, is a control factor that produces a short-term effect on the adaptation learning process and can be used to assess the availability of knowledge or abilities that learners can adapt for Web-based learning. The research model (Fig. 1) is developed based on the cognition-motivation and cognition-control views to examine the long-term and short-term effects in the adaptation learning behavior, respectively.

2.1. Self-efficacy

Bandura (1986, p. 391) defined self-efficacy as “People’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performance. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses”. Thus, the personal efficacy judgments of Web-based learning are rooted in the cognitive processes of learners in their adaptation learning behavior (Lee, 2001). SCT provides a theoretical link between cognitive (including self-efficacy and outcome expectations) and affective (including affect and anxiety) factors in goal-directed human behavior. Moreover,

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