Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction

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A R T I C L E   I N F O

A B S T R A C T

Self-efficacy is believed to be a key component in successful online learning; however, most existing studies of on-line self-efficacy focus on the computer. Although computer self-efficacy is important in online learning, researchers have generally agreed that online learning entails self-efficacy of multifaceted dimensions; therefore, one of the purposes of the current study was to identify dimensions of online learning self-efficacy. Through exploratory factor analysis, we identified five dimensions of online learning self-efficacy: (a) self-efficacy to complete an online course, (b) self-efficacy to interact socially with classmates, (c) self-efficacy to handle tools in a Course Management System (CMS), (d) self-efficacy to interact with instructors in an online course, and (e) self-efficacy to interact with class-mates for academic purposes. In addition, the role of demographic variables in online learning self-efficacy was in-vestigated. Demographic variables, such as the number of online courses taken, gender, and academic status were found to predict online learning self-efficacy. Furthermore, we found that online learning self-efficacy predicted stu-dents' online learning satisfaction. Results are discussed, and implications for online teaching and learning are provided.

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1. Introduction

Beliefs about self-efficacy determine level of motivation as reflected in the amount of effort exerted in an endeavor and the length of time persisting in a difficult situation (Bandura, 1988). *Self-efficacy* is defined as "people's judgments of their capabilities to organize and execute a course of action required to attain designated types of performances" (Bandura, 1986, p. 391). If a person has a low level of self-efficacy toward a task, he or she is less likely to exert ef-fort; therefore, the person will less likely achieve. Other research find-ings have demonstrated that self-efficacy is a better predictor of academic achievement than any other cognitive or affective processes (Schunk, 1991); therefore, self-efficacy is critical in learning and per-formance (Hodges, 2008).

Student self-efficacy seems particularly important in challenging learning environments, such as an online learning environment where students lack the opportunity to interact with others and as a result can become socially isolated and easily lost (Cho & Jonassen, 2009; Cho, Shen, & Laffey, 2010). Recent studies have shown that the drop-out rate among students in online learning environments is higher than in traditional learning environments (Ali & Leeds, 2009). Some re-searchers have asserted that the drop-out rate is related in part to lack

of self-efficacy (Lee & Choi, 2011). Researchers have argued that with the self-directed nature of online learning, self-efficacy can be a key component of academic success in distance education (Hodges, 2008); therefore, understanding self-efficacy in online learning is critical to im-prove online education. The current study was an investigation of self-efficacy in online learning settings.

2. Self-efficacy in online learning settings

Self-efficacy is context-specific (Bandura, 1986). In terms of online self-efficacy, we need to consider at least three areas: technology, learn-ing, and social interaction; however, a majority of researchers of online self-efficacy consider only the technological aspect of online learning. Consequently, self-efficacy in the other two areas has rarely been explored.

With regard to technology, numerous studies have been conducted on the role of technological self-efficacy in online student achievement. For instance, McGhee (2010) found a significant, moderate, and positive relationship between online technological self-efficacy and the academ-ic achievement of 45 community college students. Thompson and Lynch (2003) studied the psychological processes underlying resistance to web-based instruction (WBI) and demonstrated that students with weak Internet self-efficacy beliefs tended to resist WBI.

Regarding learning, Ergul (2004) showed that self-efficacy in dis-tance education significantly and positively predicted students' academic

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achievement. In addition, Artino (2008) found that students with higher self-efficacy for computer-based learning are more likely to experience learning satisfaction than students with low self-efficacy.

In terms of social interaction, Cho and Jonassen (2009) found two dimensions of online self-efficacy: self-efficacy to interact with instructors and self-efficacy to contribute to the online community. In addition, they found that students who have high self-efficacy in interacting with instructors and contributing to the online community are more likely to use active interaction strategies, such as writing, responding, and reflecting. According to Cho and Jonassen researchers of online learning self-efficacy should consider diverse situations that can occur in online learning contexts, such as interacting with others through discussion or collaboration. Hodges (2008) claimed that "research on self-efficacy in online environments is in its infancy" (p. 10); in fact, how self-efficacy manifests in online learning contexts deserves additional research and studies. Although diverse learning settings are assumed, little empirical research on self-efficacy has been conducted with a focus on all three settings in online learning environments.

3. Variables of self-efficacy in online learning settings

Three types of variables relating to student self-efficacy in online learning environments are prior online learning experience, gender, and academic status. Existing empirical research on relationships among the three variables and self-efficacy shows different findings; therefore, the current empirical study contributes to filling the void.

3.1. Prior online experience and self-efficacy

Although little research has been conducted to investigate the relationships between prior online learning experience and self-efficacy, a reasonable hypothesis is that the more students experience online, the more they are likely to have higher levels of online self-efficacy. Another possible hypothesis is that prior online experience is not related to online self-efficacy. In their recent study, Cho and Kim (2013) found that the number of online courses students took is not related to their self-regulation for interaction with others. They viewed other factors, such as task structures for interaction and requirements for interaction, including quality and the number of online interaction may be associated with self-regulation for interaction with others. Although Cho and Kim's study is not directly related to online self-efficacy, their findings imply that prior online experience may not necessarily predict online self-efficacy. Because we have two reasonable but contrasting hypotheses and because little research has been done to investigate the relationship between online experience and self-efficacy, our research findings will contribute to the expansion of understanding that relationship.

3.2. Gender and self-efficacy

Gender difference in self-efficacy has been reported in many empirical studies. For example, Wesley (2002) studied 400 community college students and found no significant difference in the self-efficacy of male and female students, but students 25 years old and older exhibited higher levels of self-efficacy than younger students. Li (2007), collecting data from 306 Taiwanese students at a technical college, found that male students had higher level of general self-efficacy and computer self-efficacy than female students, and senior students had a higher level of both of the two types of self-efficacy than underclass students. Fletcher (2005) found that gender and previous online experience influence online learning self-efficacy, with female students having greater self-efficacy; however, more recently, Hung, Chou, Chen, and Own (2010) found no gender differences in computer or Internet self-efficacy or online communication self-efficacy. Because of mixed research results, more empirical study is necessary.

3.3. Academic status and self-efficacy

Billings, Skiba, and Connors (2005) compared differences between undergraduate and graduate nursing students who took web-based courses and found that undergraduates perceived higher levels of faculty–student interactions than graduate students, and undergraduate reported higher levels of perceived connection with other students and instructor. Using the independent samples t test, Artino and Stephens (2009) compared undergraduate and graduate students enrolled in several online courses with regard to their academic motivation and self-regulation strategies. They found that undergraduates had more online learning experience, took a greater number of online courses, showed significantly greater levels of task value beliefs, and were more likely to continue to take online courses in the future than graduate students; graduate students showed significantly higher levels of critical thinking. They found no statistical differences between the two groups in self-efficacy beliefs. More empirical research will contribute to identifying relationships between academic status and online self-efficacy.

3.4. Students' satisfaction with online learning

Self-efficacy has been reported as a consistent variable in predicting students' learning satisfaction in online learning environments. Womble (2008), who investigated the relationship between e-learning self-efficacy and e-leaner satisfaction among 440 government agency employees in training courses, found significant and positive correlation between them. Lim (2001) examined the relationships among computer self-efficacy, academic self-concept, satisfaction, and future participation of adult distance learners. Findings indicated that computer self-efficacy was a significant predictor of both the satisfaction of online learners and their intention to take future web-based courses. Lin, Lin, and Laffey (2008) investigated students' task value, self-efficacy, social ability and learning satisfaction. Among participants from 11 online courses in a distance learning program, the researchers found that self-efficacy, task value, and social ability significantly impacted online learning satisfaction.

4. Research questions

The overarching research question in this study was designed to investigate the role of self-efficacy in online learning environments. More specifically, the following three research questions were examined in this study.

1. What are the dimensions of online learning self-efficacy?
2. What variables are related to students' online learning self-efficacy?
3. To what extent is self-efficacy related to students' online learning satisfaction?

5. Method

5.1. Participants

The participants in this study were students who were enrolled in an online course at the time the study was conducted. Response rate was not calculated because students were not required to report their course information. A total of 406 online students participated in the study. Among them, 301 (74.1%) students were female, and 104 (25.6%) students were male. The majority ($N = 351$, 86.5%) of the participants were Caucasian. More than 50% of the participants were in pursuit of a graduate degree ($N = 244$, 60.1%), but undergraduates were also included in the pool of respondents ($N = 151$, 37.2%). See Table 1 for detailed demographic information.