Chapter 15
An Online Learning Community Integrated with Web-Enhanced Collaborative Learning and Self-Regulated Learning

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ABSTRACT

This paper investigates two aspects of the growing trend towards collaborative learning (CL) and self-regulated learning (SRL) in higher education by examining students' computing skills in a blended learning environment. The author redesigned a course and adopted web-enhanced CL and SRL to develop undergraduates' computing skills of web page programming and website building. Three classes with 170 students in a one-semester course were chosen for the empirical study. The results in this study show that students who received web-enhanced CL and SRL had higher grades than those who did not receive web-enhanced CL and/or SRL. It can provide references for schools and teachers who plan to provide online or blended courses for their students to achieve better learning effects in web-based learning environments.

INTRODUCTION

The software training courses and programs in Taiwan traditionally use inappropriate, disjointed, lack-of-context examples. Students who learn in this context usually lack problem-solving skills and the linkage and sense-making skills for the problems faced. Many students who are awarded related computing certificates do not know when and how to apply the computing skills they learned. The performance of such training courses and programs can hardly be deemed as effective (Lee, Shen, & Tsai, 2008b).

In response to the problems in the software training courses in Taiwan and the needs for effective teaching methods, collaborative learning

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(CL) is considered as an appropriate teaching method to achieve effective and satisfying learning performance. CL describes situations in which two or more learners synchronously and interactively build a joint solution to some problems (Dillenbourg & Schneider, 1995; Tsai, 2010). If students are actively involved in decisions about how to learn, what to learn and why they are learning, their relationship to their studies will probably be qualitatively different from those students who are treated as recipients of teaching (McConnell, 2002). Moreover, it is indicated that web-mediated software training is easy and inexpensive compared to traditional training methods (Gravill & Compeau, 2008). Therefore, the author applied web-enhanced CL to develop students' practical computing skills in this study.

Online learning is self-managed when an organization or class provides the software training courses to learn computing skills, but the individual actively controls the process to achieve his or her objective to acquire new skills (Gravill & Compeau, 2008). The learner could attend lectures only to register time, place, subject, and to alter the order of attending lectures (Lee & Lee, 2008). One concern in self-management of learning is the lack of on-the-spot teacher monitoring in web-mediated instruction, which makes it even more difficult for students to concentrate on their learning in an environment that is full of Internet allure with its array of shopping websites and free online games (Tsai & Shen, 2009). It is very critical to develop students' regulation of learning before providing online courses to them (Lee, Shen, & Tsai, 2008a). It is suggested that students should have self-regulated learning (SRL) strategies when they study in an online learning environment because they have the potential to drop out if they do not use these strategies (Kougo & Nojima, 2004). Therefore, SRL was applied in this study to help students develop regular learning habits, and improve their learning effectiveness.

As problem-solving is an instructional strategy frequently adopted in CL (Gagne & Briggs, 1979), there have been many studies on instructional strategies that applied online problem-solving methods and found resulting positive effects (Hou, Sung, & Chang, 2009; Lee, Shen, & Tsai, 2008b). However, students in Taiwan are accustomed to passively receive teachers' arrangement and schedule for learning. It may pose a challenge for such students to independently learn through online CL. Strategies that prepare students for the rigors of learning at a distance and increase the probability of retention and success must be put into practice (Chang, 2005). Thus, web-enhanced CL and SRL were adopted in a redesigned course to help students learn in this study.

Educational development is happening in different ways outside of traditional classrooms. To increase access to education and enhance existing educational frameworks, information and communication technologies (ICTs) are being used to enhance delivery and provide more channels and flexibilities for students' learning (DeBoer, 2009). However, there is a continuing debate about the effectiveness of online learning environments designed for learning (Azevedo, 2005). Furthermore, there are very few studies that discuss the effects of CL and SRL simultaneously, particularly in online or blended learning environments. The researchers thus redesigned a course titled 'Applied Information Technology: Networking' and applied web-enhanced CL and SRL to improve students' computing skills, and examined the effects of these innovative teaching methods.

LITERATURE REVIEW

Collaborative Learning

The goal of CL is to assist teaching a specific educational objective through a coordinated and shared activity by means of social interactions among the group members (Dillenbourg, 1999; Zurita & Nussbaum, 2004). In a CL class, students