Chapter 10
Learning Through Sharing and Regulation:
A Case Study of Using Web-Supported Collaborative Learning with Initiation and Self-Regulated Learning

Chia-Wen Tsai
Ming Chuan University, Taiwan

Yi-Fen Chen
Chung Yuan Christian University, Taiwan

ABSTRACT

Many studies investigate the effects of Computer-Supported Collaborative Learning (CSCL) and also explore how learning processes and social interaction contribute to learning outcomes in online learning environments. This study provides an appropriate design of web-supported collaborative learning (CL) with teacher's initiation and self-regulated learning (SRL), and demonstrates the effects of this design on improving students' involvement and helping students attain course goals in a blended course. The authors conducted an experiment with an intervention of web-supported CL with initiation and SRL in a course titled 'Applied Information Technology: Networking' that included 112 sophomores from two classes at an academic university in Taiwan. The class of web-supported CL with initiation and SRL was the experimental group, and online CL without initiation or SRL served the control group. The results illustrate that web-supported CL with initiation and SRL could significantly improve students' involvement in this course. In addition, interviewed students also expressed their positive appreciation for web-supported CL with initiation and SRL. The authors expect the innovative learning activities and teaching method in this study could provide insights for online teachers.

DOI: 10.4018/978-1-4666-2023-0.ch010

INTRODUCTION

As the term ''knowledge workers'' was announced half a century ago (Drucker, 1959), the characterization was mainly limited to those who worked for a living doing tasks of planning, programming, analyzing, and transforming information. Since then, many students around the world have been taught to use information technologies as education in this field has become widespread (Judson, 2010). Particularly, computing education is also emphasized for students of all levels and disciplines in Taiwan, with almost all undergraduates in Taiwan's academic universities and vocational schools required to take four to six compulsory computing courses (Tsai, 2010b). They are even required to pass several examinations to earn related computing certificates before they graduate (Tsai & Shen, 2011). However, the teaching in these computing courses commonly adopts traditional lectures with inappropriate modules and lack-of-context examples. The modules and examples in different sections or chapters are not jointed or related (Lee, Shen, & Tsai, 2008a), thus students may be confused and not attain the computing literacy and skills required to solve problems that they face.

Industry managers seek graduates with higher-level skills in information systems (IS) and programming (Benamati, Ozdemir, & Smith, 2010). Certainly, strong technical skills are essential requirements for employees to solve problems and complete their work (Joseph, Ang, Chang, & Slaughter, 2010). Managers want and need employees with strong technical skills and knowledge as well as with competencies related to how to solve problems, how to learn, communicate, and collaborate. However, the performance of such training courses and programs in Taiwan's educational system can hardly be deemed as effective (Lee, Shen, & Tsai, 2008a). The number of qualified graduates produced by computing programs may be insufficient to meet increasing industry demands (Akbulut & Looney, 2007). To improve students' computing literacy and practical skills, collaborative learning (CL) is considered as an effective and practical approach. CL refers to methodologies and environments in which students engage in a common and authentic task where each peer depends on and is accountable to one another (Rahman, 2009). In the CL class, students learn from each other by actively co-constructing knowledge (Kienle & Ritterskamp, 2007; Stahl, 2002). Moreover, it is also indicated that CL is an active learning method and its positive effects in the classroom have been demonstrated (Auyeung, 2004).

The application of new media for both teaching and learning has highlighted the potential of innovative information technology for education. The Internet continues to generate new applications that promote learning community development (Chuang, 2010). The evolution of web-based technology in educational contexts raises the possibility of extending CL activities beyond the school walls (Ligorio, Talamo, & Pontecorvo, 2005). Online courses integrated with CL represent a new and greatly valued opportunity, not only in terms of access to fellow students but also in the chance to work together (Macdonald, 2003). Students were content with their experience of virtual, collaborative learning, which forced them to practice self-direction and independent work (Lakkala, Ilomäki, & Palonen, 2007). In Chou and Chen's (2008) study, it was found that online CL could motivate students to be involved in learning and could support learning outcomes. Therefore, the authors adopted web-supported CL to help students learn and get involved in a blended computing class.

Many students in Taiwan have gotten used to a "spoon-feeding," or didactic, teaching method since they were elementary school students. They are used to receiving teachers' lectures and schedule of learning, and generally lack the ability to seek essential information and solve the problems they face (Tsai, 2010a). It is also indicated that in the initial stage of the problem-solving learning