Chapter 13

Exploring the Effects of Web-Enabled Self-Regulated Learning and Online Class Frequency on Students' Computing Skills in Blended Learning Courses

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ABSTRACT

Web-based courses have shown to be successful in providing quality distance education. However, due to a national education policy, pure online courses are not permitted in Taiwan. In addition, there exists a lack of appropriate design and delivery of blended learning courses. In this study, the authors conducted a quasi-experiment to examine the effects in applying blended learning (BL) with web-enabled self-regulated learning (SRL) to enhance students' skills of deploying database management system (DBMS). Four class sections with a total of 172 second-year students were taken as four distinct groups. The results showed that students in the SRL and BL groups with 5 online classes had the highest grades for using DBMS among the four groups. Students who received the treatments of web-enabled SRL also outperformed a control group that did not have the benefit of instruction in SRL. The implications of this study are also discussed.

INTRODUCTION

The goals of vocational schools concentrate on developing a highly skilled workforce (Lee &

Huang, 1996). Professionals with a vocational degree represent a major portion of the work force in Taiwan (Shen, Lee, Tsai, 2007a). However, vocational education in Taiwan is highly competitive in that it must attract sufficient student enrollments in the face of a continually decreas-

ing birth rate and rapidly increasing number of schools. Schools, facing the high pressure of market competition, often emphasize the proportion of students awarded certificates before they graduate. That is, teaching in this sector usually focuses on helping vocational students to pass the certification examinations (Shen, Lee & Tsai, 2007). The grades on students' certificates and the numbers achieved are the main criteria to evaluate teachers' teaching and students' learning. In this regard, how to help students enhance their professional skills and pass the certificate examinations is a major concern to many teachers in vocational schools in Taiwan.

Web-assisted instruction has been advocated by contemporary educators and researchers (Liu & Tsai, 2008). Asynchronous, web-based educational programs have been shown to be quite successful in providing quality distance education (Overbaugh & Casiello, 2008). However, the policy of e-learning in Taiwan is relatively conservative in contrast with that in the U.S. For example, earning an academic degree entirely through online courses is still not allowed at present. That is, teachers in some nations with conservative institutions and implementations of e-learning, have to adopt a mode of blended learning (BL) rather than pure online learning when implementing e-learning. The effectiveness of BL has already been demonstrated (Liu, Chiang & Huang, 2007; Pereira, Pleguezuelos, Merí, Molina-Ros, Molina-Tomás & Masdeu, 2007; Shen, Lee & Tsai, 2007b), nevertheless, due to limited research on how BL can be conducted effectively using the Internet, it is essential to investigate and develop an appropriate design and arrangement of BL courses for schools and teachers. For example, what frequency of online classes in a BL course is more appropriate to the students, particularly for those with low self-regulatory skills? The authors conducted an experiment to explore the appropriate online class frequency that supports student learning.

Through the Internet, learners are free to access new information without restrictions (Li, Tsai & Tsai, 2008); however, this may also be one of its greatest dangers. There is a continuing debate about the effectiveness of online learning environment designs (Azevedo, 2005; Jacobson, 2005). Online learning differs from didactic presentation, where the student has few opportunities to deviate from the teacher's presentation of the material (Greene & Azevedo, 2007). Moreover, it is indicated that vocational students are more Internet-addicted than students in general (Yang & Tung, 2007). Many vocational students are addicted to shopping websites, online games, and online messengers, and prefer this rather than getting involved in courses, particularly online courses (Shen, Lee, Tsai & Ting, 2008). This addiction to the Internet and the lack of on-the-spot teacher monitoring in web-based instruction makes it even more difficult for students to concentrate on online learning (Shen, Lee & Tsai, 2008). To respond to this challenge, the authors adopt self-regulated learning (SRL) that can help students better regulate and improve their learning.

As more and more institutions of higher education provide online courses, the question arises whether they can be as effective as those offered in the traditional classroom format (Shelley, Swartz & Cole, 2007). However, few studies have discussed effective online instructional methods for vocational students (Shen, Lee, and Tsai, 2007a). Furthermore, we expect that innovative teaching methods and technologies could improve students learning in BL courses. Specifically, this study explores the potential effects of web-based SRL with variations in online class frequency on the development of vocational students' computing skills. Based on suggestions from earlier research, we have re-designed the course and conducted a series of quasi-experiments to examine the effects of web-enabled SRL, varying with frequency of online classes on vocational students' computing skills.

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