Contents lists available at ScienceDirect

Internet and Higher Education

University students' self-control and self-regulated learning in a blended course

Yue Zhu [a,*], Wing Au [b], Greg Yates [b]

[a] Confucius Institute, La Trobe University, Australia
[b] School of Education, University of South Australia, Australia

ABSTRACT

The paper aims to report the influence of self-control and self-regulated learning on a group of tertiary students' learning outcomes in a blended learning environment. In this project, 74 second-year students who were enrolled in a blended course of ICT in Education completed a questionnaire survey on self-control and self-regulated learning skills at the beginning of the course and weekly reports about their learning experiences during the course. It was found that self-control (as a dispositional personality trait) and self-regulated learning (students' capability of using effective strategies to achieve their learning goals) would predict the participants' course outcomes that were indexed by their final grades in the course. The impact of self-control on the participants' learning outcomes was mediated through their self-regulated learning and course participation.

© 2016 Published by Elsevier Inc.

1. Introduction

Blended learning is a mode of learning that combines face-to-face and online instruction and communication (Rovai & Jordan, 2004). Within tertiary education, blended learning provides students with better control over their own study and an access to an array of course content and computer and Internet technologies (Balsera, 2001; Harasim, 2000; Harding, Kaczynski, & Wood, 2005; Stansfield, McLellan, & Connolly, 2004). In another word, students can access online course materials and communicate with teachers and peers online, but at the same time, attend face-to-face instructional sessions (Dziuban, Graham, & Picciano, 2013; Moskal, Dziuban, & Hartman, 2013). However, blended learning brings more challenges to tertiary students. For example, blended courses have higher requirements on students' course engagement and self-regulated learning while they study online (Gedik, Kiraz, & Özden, 2012). Students need to make the first move to learning, determine their needs, set their learning goals, explore learning resources, manage time and environment, and apply effective learning strategies, in view to achieve satisfying learning outcomes.

It has been well established that self-control and self-regulated learning can contribute to students' success in learning (e.g. Feldmann, Martinez-Pons, & Shaham, 1995; Mischel, Shoda, & Rodriguez, 1989; Moffitt et al., 2011; Shoda, Mischel, & Peake, 1990). However, not enough

research has been done on how self-control and self-regulatory learning can influence tertiary students' learning outcomes in a blended learning environment. Especially, it is worthwhile to examine whether the impact of self-control and self-regulated learning can be mediated through students' course participation. The present study aims to identify the predictive relationship between students' self-control and self-regulated learning and their learning outcomes. Moreover, the mediation of students' course participation between the above factors was examined as well.

2. Self-control and self-regulated learning

In the literature of personality psychology, the term "self-control" is used to refer to the ability to make plans and carry them out in the face of difficulties and challenges (Vohs & Baumeister, 2004). Therefore, self-control encompasses aspects, such as thinking through long term goals, resisting temptations, delaying gratification, and controlling emotional impulses. An extensive literature has documented substantial individual differences in people's ability to exercise self-control, particularly when indexed as the ability to override temptations and refrain from acting on impulses, in order to achieve a worthy long-term goal (Baumeister & Tierney, 2011).

It has been reported that self-control had a significant impact on students' learning outcomes since younger age. In the research (as known as "Marshmallow Test") by Mischel et al. (1989) and Shoda et al. (1990), it was found that the young children who showed higher levels of self-control achieved better learning outcomes in young adulthood,

* Corresponding author.
E-mail addresses: Y.Zhu@latrobe.edu.au (Y. Zhu), wing.au@unisa.edu.au (W. Au), greg.yates@unisa.edu.au (G. Yates).

including higher scores on the Scholastic Assessment Test (SAT). Later research by Moffitt et al. (2011) demonstrated strong predictive relationships between childhood self-control and a wide range of consequential life outcomes including educational qualification. Moffitt et al. found that there were more participants (about 42%) from the lower self-control group leaving school with no educational qualification than those (about 5%) in the group with the highest scores in self-control.

Regarding the impact of self-control upon tertiary students' learning outcomes, Wolfe and Johnson (1995) reported that self-control was the most powerful predictor among 32 personality variables of the Jackson Personality Inventory (JPI) (Jackson, 1976) and significantly contributed to the students' grade point average (GPA). Tsai (2009) identified a series of self-control strategies used by college students to concentrate on learning in an online environment. The self-control strategies of avoiding distraction from interruption, focusing on learning, and using time effectively were found to be important for students' online learning. In addition, Yu, Chen, Yang, Wang, and Yen (2007) found that a low level of self-control was one of the reasons for students' rejection to online learning.

Self-regulation refers to human exercise of control over oneself, especially through activating the most effective strategies, in order to bring the self into line with preferred standards. Self-regulation in learning can be described as students' capability of self-generating their thoughts, feelings, and actions that are planned and cyclically adapted to achieve their learning goals (Pintrich, 1995; Zimmerman, 1998, 2000). Regarding detailed constructs of self-regulated learning, there are three major components — metacognitive strategies (planning, monitoring, and regulation), management of effort on course materials, and cognitive strategies (Pintrich & De Groot, 1990).

Self-regulation is found to be an important influential factor on students' learning among the students across different age levels. For example, Feldmann et al. (1995) found that, among a group of eight-grade students, those with higher levels of self-regulation, as indexed by the strategies they were using, received higher grades in their course. Pokay and Blumenfeld (1990) reported a significant relationship between 283 high school students' course results and their motivation and effort management in a geometry course. Similarly, Pintrich and De Groot (1990) found a group of seven-grade students' course results were significantly related to their intrinsic value, self-efficacy, test anxiety, strategy use, and self-regulation (i.e., metacognitive and effort management items).

In tertiary education, it has been found that the students with self-regulated learning capabilities could achieve better learning outcomes (Hu, 2007; Kauffman, Ge, Xie, & Chen, 2008; Kauffman, Zhao, & Yang, 2011; Tsai, Shen, & Tsai, 2011). Yukselturk and Bulut (2007) used Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & Mckeachie, 1991, 1993) to examine 80 university students' self-regulated learning in an online computer course. It was revealed that self-regulation strategies could significantly predict the students' learning outcomes. Puzziferro (2008) found that the students' regulation of time, study environment, and effort were significantly related to their final grades. Such a significant relationship between students' self-regulation and learning outcomes was also reported by Al-Khatib (2010), Shih and Gamon (2001), Thompson, Meriac, and Cope (2002), and Whipp and Chiarelli (2004).

Although the terms of self-control and self-regulation appear to overlap, there is an important distinction. Self-control refers to the human capacity or personality trait that is needed to achieve long-term goals through controlling one's impulses and resisting threat to these goals (Baumeister & Tierney, 2011). Self-regulation, on the other hand, refers to what people actually do, that is the specific activities people are engaged in so as to keep oneself on-track (Zimmerman, 1989).

In the present study, self-control is treated as a background personality trait, while self-regulation is regarded as specific strategies that students applied to achieve their learning goals. It is widely accepted that self-control and self-regulated learning can influence students'

learning achievement. However, further research needs to be done on how self-control and self-regulation can impact upon students' learning outcomes in the area of blended learning environment, e.g., whether the impact can be mediated through the students' course participation.

3. Methods

The present project employed both quantitative and qualitative research methodologies among 94 university students in Australia. This study comprised a range of sources of information: a questionnaire survey on the participants' self-control and self-regulated learning conducted at the beginning of the course; weekly reports about the participants' course experiences; their online forum contributions; and learning outcomes (defined by the results achieved by the participants at the end of the course) (Fig. 1 in Appendix A). The research aims to investigate a) whether students' self-control and self-regulated learning would influence their learning outcomes; and b) whether the influence of self-control and self-regulated learning on the students' learning outcomes would be mediated through learning process factors that were measured through weekly reports and online forum contributions.

3.1. Participants

The participants were 94 second-year education students who took a 12-week blended course in a university in Australia. This blended course aimed to provide students with theories, research, and practices of using information and communication technologies in teaching and learning. The course blended face-to-face instruction (i.e., one-hour lecture and two-hour tutorial every week on campus) and online learning mode that included online delivery of learning materials, participation in online forums, communication through email, and application of Internet technologies to facilitate the participants to accomplish the course tasks and assignments.

3.2. Procedure

The approval for the present study was firstly obtained from the course coordinator. The application for ethics approval was submitted together with the course coordinator's consent. The participants were informed of the aims of the study, length of the surveys, the information that would be gauged through the questionnaire survey, and how the data would be collected, stored, and accessed. Furthermore, the participants were assured of the confidentiality that no personal information would be identified in the report.

The participants were asked to complete a questionnaire survey about their capability of self-control and self-regulated learning at the beginning of the course. During the course, the participants were asked to complete brief study reports for six weeks that gauged their self-reflected learning experiences. Seventy-four out of the 94 participants completed the weekly reports. By the end of the course, based on the participants' consent, their learning outcomes measured by overall grade aggregate were collected. Meanwhile, the records of the participants' posts to the online forums were obtained and treated as learning process factors with the data from weekly reports.

3.3. Instruments

A variety of scales were used to measure people's self-control (e.g. Grasmick, Tittle, Bursik, & Arneklev, 1993; Mezo & Heiby, 2005; Tangney, Baumeister, & Boone, 2004). Among these scales, Tangney et al. (2004) developed a Self-control Scale based on an extensive literature. The dispositional measurement of self-control used in the present study was the short form of the Self-control Scale published by Tangney et al. (2004). The present questionnaire contained 13 items that documented substantial individual differences in the ability to exercise self-control, specifically to override temptations and refrain from acting