Chapter 10
Online Learning and Metacognition:
A Design Framework

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ABSTRACT

Online learning experiences are becoming the norm for an increasing number of higher education students. Although there are clear advantages to online learning in terms of flexibility and access, many students struggle to succeed, especially in purely online learning environments. To a large extent student success in online learning environments is dependent on students' ability to self-regulate and 'learn for themselves'- both abilities related to academic metacognition. Unfortunately, even at university, many students do not have well developed metacognition. It is therefore important to consider carefully metacognitive scaffolding in the design of online learning experiences. However, the models of instructional design commonly used in online learning tend not to place great emphasis on the importance of metacognitive scaffolding. The aim of the present chapter is therefore to increase awareness of metacognition, as one of the important considerations in the design of online learning environments that can help to maximize chances of student success. Towards this end, a framework of instructional design that is more sensitive to metacognition is developed.

INTRODUCTION

It is highly likely that post-secondary students will experience online learning to some extent; whether it be a fully online program of study, an online course in a campus-based program, or blended courses involving both online and face-to-face components. To further emphasize the scale of online learning, the number of students, according to IPEDS data undertaking distance online education in the United States in 2013 is roughly 5.5million (of which about 2.6million are fully online) and approximately 70% of administrators agree that online education is critical to the institution's long term strategy (Allen & Seaman, 2015).

Although the pervasiveness and popularity of online learning is quite evident, the effectiveness of online learning and the nature of student online

experience is less evident, and is subsequently the subject of a large volume of literature. Commonly, the effectiveness and experience in online courses is examined by comparing student experiences and learning outcomes between courses offered face-to-face and those offered online, or in blended modes. Salamonson and Lantz (2005) for example, compared levels of student satisfaction with blended courses as opposed to traditional face-to-face courses finding high levels of student satisfaction in courses using blended approaches. Other studies such as those by Holley and Oliver (2010), Lust, Vanderwaetere, Ceulemans, Elen and Clarebout (2011), Mitchell and Forere (2010), and Richardson and Turner (2000) consider how individual differences among students contributed to differing levels of student satisfaction in online or blended courses. Yet Other studies consider effectiveness of blended approaches by comparing learning performance, the reactions of 'experimental' group of students exposed to blended learning techniques to a 'control' group exposed traditional face-to-face teaching only. Learning performance was generally assessed by pre- and post- test scores (EL-Deghaidy & Nouby, 2008).

The results of online effectiveness and/or online student experience studies are mixed. Some studies report a more positive student experience and better or equal learning outcomes in online learning environments than in face-to-face learning (for example, Vernadakis, Antoniou, Giannousi, Zetou, & Kioumourtzoglou, 2011; EL-Deghaidy & Nouby, 2008; Haripersad & Naidoo, 2008); while others report a decline or no difference in learning outcomes and student experiences (for example, Dell, Low, & Wilker, 2010, Jaggers, 2010).

In attempt to better understand effectiveness of online learning, studies typically seek to identify factors contributing to the effectiveness of online learning and/or to positive student experience (or otherwise) of the online learning experience. Among the commonly cited factors which enhance the student experience are flexibility, convenience

of access, collaboration across time and place, increased learner motivation and learner perceptions (Neal, 2001, Roffe 2002).

It should be noted that one shortcoming of many studies that examine the effectiveness of, and student satisfaction in, online courses is that the instructional design of the course is often neglected as an important contributing factor. To illustrate this shortcoming: an article by Hsu and Hsieh (2011) reports on a quasi-experimental study to compare learning performance and experience of nursing students using a online module to study ethics with the performance of nursing students using traditional face-to-face methods. Hsu and Hsieh (2011) reported no differences in learning outcomes were found between the online study group and the traditional group. The statement is made that "as demonstrated in this study, nursing students are generally more comfortable with traditional-style teaching" (p. 2442). Although some of the characteristics of students are acknowledged as contributing to the outcome, an explanation of the design of the online experience is neglected. Furthermore, the outcomes of the study are compared to other studies attempting to determine the effectiveness of online/blended learning, but again, there is no consideration of the design (nor the academic context) of the online/blended strategies to which Hsu and Hsei's (2011) study is being compared.

The instructional design of the online learning experience aside, the ability of students to engage effectively with online materials is also a sometimes neglected (but important factor) in effectiveness studies. As Tsai (2009) observes:" when students shift their learning from traditional to online learning environments, they are challenged by different learning and interaction methods" (p. 34). The learning strategy implemented by students while learning online is an important factor for student success in online environments (Tsai, 2009; Breyer, 2010), and not all students will have well developed online learning strategies. Thus, embedding learning support in the

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