Chapter 4

The Impact of Combining Video Podcasting and Lectures on Students’ Assimilation of Additional Knowledge: An Empirical Examination

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ABSTRACT

Podcasting is evolving rapidly in higher education due to its pedagogical possibilities, such as providing supplementary materials to increase learning. This chapter aims to provide insights about the complementarity between traditional and innovative methods in teaching practice. In particular, the authors examine the value of video podcasts in the learning process, investigating how prior knowledge gained from lectures, students’ attitude toward using this tool, and its effective use, may account for the assimilation of additional knowledge presented in this multimedia format. Drawing on several learning-related theories, they develop a conceptual model that is empirically tested. After following instrumental design principles and a formal research procedure, the findings show the influence of prior knowledge and effective use on students’ assimilation capacity. Moreover, attitude positively affects the effective use of the tool. Finally, the authors discuss the main academic and practical contributions of this study and provide recommendations and future research directions.

INTRODUCTION

The use of new technologies in education is a very dynamic and relevant area in the current supportive learning environment. Educational institutions are investing substantial resources in providing supplementary e-learning tools according to the belief that the conventional method of teaching has failed to sufficiently engage students in the learning process, and also that information technologies can be used to compensate for inefficiencies inherent in the traditional educational...
context (Leidner & Fuller, 1997). By increasingly complementing traditional classes with innovative computer-based tools (Camarero, Rodríguez, & San José, 2012; Kay, 2012; Leidner & Fuller, 1997), institutions encourage students to foster the active assimilation of additional knowledge in order for meaningful learning to occur.

However, there are several factors that could hinder this process. For example, the inaccurate processing of prior knowledge presented in class, the negative attitude toward the e-learning tools utilized, or their ineffective use by students, may clearly limit the successful assimilation of additional knowledge. These determinants thus play a critical role in assessing the implementation of complementary innovative learning technologies. Yet, despite an increase in examining the effectiveness of computer-based learning tools and traditional methods both individually or comparing one another (e.g., Boster, Meyer, Roberto, Inge, & Strom, 2006; Griffin, Mitchell, & Thompson, 2009), research has not fully addressed which factors determine the assimilation of additional contents when traditional and innovative methods are complementarily used.

In this chapter, we examine the value of computer-based tools in the learning process, investigating factors that may account for the assimilation of additional knowledge when these tools are combined in a course. Specifically, we analyze the effect of three variables in this process: the prior knowledge gained from lectures, the students’ attitude toward using an innovative tool, and the effective use of this tool. This idea is interesting from the pedagogic and academic points of view due to several factors:

- Learning performance is greatest when new knowledge is related to prior stored knowledge (Bower & Hilgard, 1981; Mayer, 2008), however there is little empirical evidence on whether knowledge gained from traditional methods may affect the assimilation of supplementary knowledge provided by an e-learning tool.
- Educators and scholars have been largely interested in understanding the students’ acceptance process of computer-based tools (e.g., Cheung & Huang, 2002; Teo, Lee, Chai, & Wong, 2009). In particular, there is a need to study how both the attitude toward using an innovative tool and its effective use affect the improvement of students’ knowledge assimilation capacity (e.g., Hargis & Wilson, 2005; Lane, 2006).

The proliferation of multimedia tools and their widespread use in education increases the interest in focusing on analyzing the process of assimilation of complementary knowledge in the multimedia environment. In particular, multimedia tools present the information in a format that eases assimilation and learning (Mayer, 2001) and students would need low-to moderate effort to efficiently use them (Amoroso & Cheney, 1991). Application of multimedia technology in the classroom can complement large, impersonal lectures, supplement course materials, and allow the students access to course information any time or anywhere (Baker, Harrison, Thornton, & Yates, 2008). In this chapter, we pay our attention to video podcasts as multimedia tools that are evolving rapidly in higher education due to their pedagogical possibilities such as providing supplementary materials to improve learning (Kay, 2012; McGarr, 2009).

Podcasts are defined as video files that are distributed in a digital format through the Internet using personal computers or mobile devices (McGarr, 2009). A key advantage of this technology is that the file format and delivery method can meet students’ mobile and lifestyle needs by transporting a professor’s teachings away from the confinements of the lecture hall or computer/audio carrel and into any environment of the listener’s choosing (Bongey, Cizadlo, & Kalnbach, 2006). As educators investigate ways to deliver lecture notes and other educational materials, the growing acceptance of computers and new devices such as smartphones across college campuses...