

Chapter 48

The Effects of the Instructional Video on Pre-Service Teachers' Technology Learning in an Online Environment

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ABSTRACT

This chapter presented an investigation on the effects of the instructional video on students' learning of technology in an undergraduate level online computer application course for pre-service teachers. An instructional video was developed and added to the online instruction of one learning module to explore the effects of the instructional video on students learning of computer application. A Chi-square test was conducted to examine students learning outcome and yielded a significant result. The result revealed that students who used the instructional video were more likely to complete the learning task successfully than those who did not, indicating that the instructional video was effective in assisting students learning of technology in an online environment.

INTRODUCTION

The rapid advancement in technology and the Internet has made online instruction an alternative means of teaching and learning in post-secondary

education. It has also become a substantial supplement to traditional teaching. As online instruction becomes more prevalent, it is critical to design good quality online instructions to help students learn effectively and efficiently.

Instruction, whether it is in an online or a traditional classroom setting, "should be the

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creation and use of environments in which learning is facilitated (Alessi & Trollip, 2001, p. 7)". Online instruction has different learning dynamics from traditional classroom teaching. The ever-advancing multimedia presentation technology allows for new possibilities in designing online learning materials. Instructional designers and online instructors have a whole range of presentation methods at their disposal, from text, pictures and animation to audio and video. Technically they are able to integrate a variety of multimedia contents in online instructions that support and enhance student learning. While technology itself is not a means to an end, it can provide a rich interactive learner-centered environment and easily accessible learning resources and support that are considered to be critical elements of online learning (Oliver, 1999).

With fast developments in multimedia technology, the key issue that instructional designers and educators are dealing with is how to present information in instructional materials in such a way that learning is optimized (Muthukumar, 2005). Researchers in educational psychology, educational technology and instructional design have shown interests in the effects different presentation modes have on learning. The impacts of multimedia technology on learning outcomes have been researched substantially in the areas of education and assistive technology, instructional design, computer-based learning, human-computer interaction, education psychology, etc. Studies comparing different multimedia presentation techniques have also been conducted quite often. However, previous studies produced mixed results. Although there were empirical studies that provided evidence that multimedia instructions enhanced students learning (Cherrett, Wills, & Price, 2009; Choi & Johnson, 2007; Stelzer, Gladding, Mestre, & Brookes, 2009; Zhang, Zhou, Briggs, & Nunamaker, 2006), there was also evidence that indicated no significant differences between different presentation modes (DeVaney, 2009; Fox, 2010). The indecisive results of previous research

indicate that designing effective multimedia instructions is not an easy task, and evaluating the effectiveness of multimedia instructions could be complicated (Ellis & Cohen, 2001). Therefore, it is necessary to conduct further research to examine how and when to use multimedia instructions to facilitate students learning.

One of the challenges of online instruction is designing a learning environment that motivates students and authenticates their learning experience, especially in a computer software application course. In a traditional classroom setting, students attend a weekly lab section and instructors or lab assistants can guide them through the use of software. When the course is delivered online, students are often expected to learn the software independently using the textbooks or online modules that contain step-by-step instructions with screen captures of the software. Although many of the college students nowadays are considered to be a part of Net Generation who grows up with technology and computers, there are still a large number of people who are affected by computer anxiety and frustration (Wilfong, 2006). For this part of the population, learning computer software application is hard enough in a traditional classroom setting. Taking a computer software application course online can be very challenging because of the absence of the instructor. Therefore, to accommodate the learning needs of this population, it is especially critical to design an authentic learning environment that facilitates their technology learning, reduce their level of anxiety and enhances their experience. The present investigation was undertaken to look into the issue of how to use multimedia presentation technology to enhance students learning.

BACKGROUND

In the field of cognitive research, Mayer is well-known for his research in multimedia learning. Believing that the design of multimedia environ-

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