Chapter 14
The Impact of Examination Software on Student Attitudes and Examination Performance

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ABSTRACT

The impact of examination software on student attitudes was investigated. The Technology Acceptance Model (TAM) provides the theoretical foundations for studying the completion of examination on student laptop computers. The model applies TAM to link both faculty and technical support for the examination software to student attitudes towards the software, while it is mediated by the perceived usefulness and ease of use of the software. The model is empirically tested using questionnaire responses from 107 students enrolled in sections of a business core course using the examination software. The statistical technique used is structural equations modeling. Empirical results show that perceived usefulness and ease of use of the software have direct, meaningful impacts on developing positive attitudes toward the software. Furthermore, faculty support and ease of system use impact student attitudes in a meaningful fashion indirectly through perceived usefulness. These empirical results are discussed and implications for instructors are offered.

INTRODUCTION

Declining technology prices and tight university operating budgets create an opportunity and a need to incorporate computer technology into the learning environment. Furthermore, the mobility of laptops provides a number of teaching and learning-oriented advantages; one advantage that has not been fully explored is using laptops to evaluate and assess

student performance. The challenge is how to provide a secure examination environment such that students are constrained from accessing notes on their laptop hard drives or the internet, or communicating with other students via email and instant messaging. Another key issue, from both a faculty and student perspective, is the affect on a student's grade. If a student takes an exam using a paper and pencil exam there may be test anxiety, poor handwriting or hand cramps from writing, but most of these do not affect the outcome of the exam. Using technology though to automate the process of the exam, i.e., typed text, allows the student to eliminate the poor handwriting and hand cramping but adds an additional dilemma – what happens if the technology fails during the exam? A laptop could crash, the power could go out forcing battery backup, or the application could fail all these events could affect the outcome of the exam. In addition, as students prepare to enter the work force where there is an expectation of technology literacy, they must be prepared to learn the technology and then adapt to the changing environment.

As part of the student's transition from the university environment to the work force, an important skill they need is confidence in their ability to use technology. Confidence in one's ability can make the difference in a student being hired quickly for their first management position or struggling to find an entry level position. In general, self-efficacy is the individual's perception of possessing the requisite abilities to successfully perform a specific task (Bandura, 1977; 1982; 1986). A companion to self-efficacy is outcome expectancy which reflects the individual's perception regarding the result or gain from successful completion of these tasks. Expectancies have significant influence in a variety of settings involving behavioral and affective outcomes (Henry & Stone, 2001; Stone & Bailey, 2007; Lin, Ko & Wu, 2008).

Understanding self-efficacy and outcome expectancy can help to improve a student's transition from the university environment to the work force (Jenkins & Garvey, 2001). The research presented below focuses on the self-efficacy and outcome expectancy of technology use and its affect on exam performance. The purpose of the research was to evaluate the viability of using examination security software to conduct computer-based in-class examinations. A critical element in this evaluation is the affect on student performance as well as student confidence in their ability to use the technology.

The remainder of this paper is organized into sections presenting the details of this examination of self-efficacy theory and its impact on student's performance. First, a discussion of the theoretical model based on self-efficacy theory is presented. Next, the hypotheses to be tested are derived from the theoretical framework and the methodology used in the research. Finally, based on the empirical results, a discussion of the results is presented followed by conclusions and directions for future research.

THE THEORETICAL MODEL

Predicting and perceiving student's technology use can be based on self-efficacy theory (Bandura, 1986; Bates & Khasawneh, 2007). Self-efficacy theory has been used to explain user reactions to information technologies (Bandura, 1986; Baronas & Louis, 1988; Hasan, 2003; Havelka, 2003; Martinko, Henry, & Zmud, 1996; Meier, 1985; Potosky, 2002). The theory (Bandura, 1986; 1982) links an individual's cognitive state to a variety of affective and behavioral outcomes and perceptions of future outcomes (i.e., loss of control, low self-confidence, low achievement motivation) (Staples, Hulland, & Higgins, 1998).

Recent research on computer self-efficacy investigated demographic predictors (e.g., academic major, gender, computer-related experience) influence on business student's self-efficacy (Havelka, 2003). Significant differences in self-

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