

Chapter 5.14

The Influence of Computer-Based In-Class Examination Security Software on Students' Attitudes and Examination Performance

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ABSTRACT

Expectancy theory is applied to the use of software that secures the testing environment of in-class examinations. This security software prohibits students from viewing unauthorized material during an examination. The empirical study collected 60 student questionnaire responses completed after using the security software. These responses were used to develop measures for a model derived from expectancy theory. Using structural equation modeling, the model was estimated twice for two different variables.

These dependent variables were student attitude towards the security software and the student's examination grade. The empirical results indicated that student attitudes were positively impacted by self-efficacy, outcome expectancy, and the software's ease of use. However, student grade was not influenced by any measures in the model. It is concluded that the security software is neutral with regard to student performance, while there are manageable actions faculty can take to positively impact student attitude towards security software.

INTRODUCTION

Declining technology prices and a drive to innovate in the learning environment create an opportunity to incorporate computer technology into the classroom. An example of these types of opportunities is the use of laptop computers to facilitate learning and classroom activities. The mobility of laptops provides a number of teaching and learning advantages. One such advantage that has not been fully explored is using laptops to evaluate and assess student examination performance by having students complete their examinations using laptops.

When using laptops on examinations, one challenge for instructors is how to provide a secure examination environment. A secure environment restricts students from accessing notes on their laptop hard drives or the Internet as well as prohibiting communication with other students via e-mail and instant messaging. Another challenge for both faculty and students is how to make sure that the technology has no impact on a student's grade. If a student takes an examination in a traditional way, using paper and a pencil, there may be test anxiety, poor handwriting or writing hand cramps, but the testing method (i.e., paper and pencil), does not affect performance on the examination. Using technology to automate the process of the examination provides advantages (i.e., typed text and no poor handwriting and hand cramping) but adds an additional dilemma, that is, what happens if the technology fails during the examination or if an inadvertent key stroke by the student leads to the loss of typed text? Furthermore, the laptop could crash, the power could go out forcing battery backup, or the software application could fail. All these events could affect student performance and the student's grade on the examination. It is important to know if using computer technology for assessment has an effect on this important outcome.

Another advantage of using laptops for examinations is to better prepare students entering

the workforce. An important skill needed by today's graduates is confidence in technology ability. Confidence in one's ability can make the difference in a student being hired quickly for a management position or struggling to find an entry-level position. Any positive experiences using technology in novel environments can help build students' confidence levels regarding technology and its use. In other terminology, these students' confidence and its role in many behavioral and affective outcomes is described by self-efficacy and outcome expectancy (Henry & Stone, 2001; Jenkins & Garvey, 2001). In general, self-efficacy is the individual's perception of possessing the requisite abilities to successfully perform a specific task (Bandura, 1977; 1982; 1986). Outcome expectancy is a companion to self-efficacy reflecting the individual's perception regarding the result or gain from successful completion of these tasks. In this context, the expectations of self-efficacy and outcome expectancy provide a well-established theory by which to understand the impacts of laptop-completed examinations on student performance and attitudes.

The research presented below focuses on how the use of computers by students to complete examinations in a secure environment impacts their performance and attitudes as predicted by a model based on expectancy theory. The remainder of the article is organized into sections to present the details of this examination of self-efficacy theory and its impact on student performance. First, a discussion of the theoretical model based on self-efficacy theory is presented. Second, the methodology used in the research is discussed. Finally, the empirical results are examined followed by conclusions and directions for future research.

LITERATURE REVIEW

The model used to guide the use of laptops on examinations and the corresponding use of security

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