Leveraging Technology-Enhanced Teaching and Learning for Future IS Security Professionals

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INTRODUCTION

The use of social media technologies to connect with peers/colleagues is prevalent amongst students and practitioners alike. These technologies are being used to share ideas, content, resources, and experiences for both social and professional purposes. However, modern learning environments do not always implement the latest technologies and are therefore failing to support the needs and career expectations of Generation 2020. Thus, technology enhanced learning is proving invaluable in creating interactive collaborative learning environments that can address the needs of future graduates. The social business gaming platform considered in this chapter leverages the social networking concept in an academic environment. This study was undertaken in order to develop Information Systems (IS) security skillsets through the creation and facilitation of social business gaming. The online business game required students to apply what they have learned to problem situations to further develop their understanding of IS security (ISS) topics. The problems posed required learners to prove their understanding of the material being taught in the traditional lecture, and then apply what they had learned in an online environment, allowing students to both collaborate and compete against their peers in a series of challenges. The game was utilised as a part of the continual assessment process to evaluate group interaction, role-playing, competition and learning in an ISS assignment and facilitate the students to measure their own performances of understanding. Thus, the game was not just an assessment mechanism for grades, but also a learning tool. This chapter focuses on a group of final year undergraduate students completing Bachelor of Science in IS and outlines the online ISS environment used in the study.

BACKGROUND

Organisations actively use simulated environments to both test (e.g. psychometric) and train (e.g. virtual trading of stocks and case study analysis) employees. Medical and scientific educators actively promote the learning of these disciplines through simulation and modeling tools (Quellmalz & Pellegrino, 2009) but to date social gaming has not been widely applied as a learning aid for business and IS (security) graduates.This chapter endeavours to leverage social media technology to enhance and support the learning and assessment mechanisms utilised in an undergraduate final year ISS module with the objective of providing students with a practical proactive knowledge of

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the implementation and management of ISS in business, an increasingly important and understudied topic (White et al., 2013). The chapter is structured as follows; the subsequent section considers the area of learning, focusing on the weaknesses associated with traditional learning and highlighting how learning tools may overcome many of these. Following this, the nature of ISS education is presented and the workplace of the future is considered with particular emphasis placed on the need for business graduates with skills in social media technology. The research approach is then outlined. The case is presented and discussed and finally attention is attributed to the conclusions of the study.

Traditional Approaches in Teaching and Learning

Traditional learning approaches dominate third level education, however, more recently these practices are complemented by alternative approaches to teaching and assessment. This includes the use of Web 2.0 technologies (i.e. podcasts, social network sites, media sharing platforms, etc.) as a means of active learning, to further support and engage the learner (Cao et al., 2013). Traditional learning, also known as the teacher-centered paradigm, is regarded as a learning environment that encourages passive learning (Barr & Tagg, 1995), does not develop problem-solving skills, and ignores the individual needs of the students (Hannum & Briggs, 1982). It could be argued that advances in technology, such as multimedia and virtual simulations, have left the traditional classroom trailing behind, with learners expecting more and more. Social media provides a solution to these problems by incorporating the collaborative attributes associated with Web 2.0 technologies (Schneckenberg, 2009). Instructors are redesigning learning and assessment mechanisms by leveraging the dynamic interactive capabilities that social media can provide, which ultimately helps improve the essential skills students require to become business and ISS professionals. The widely accepted criticism of the teacher centred model is that the 'what' rather than the 'how' of the instruction is delivered (Goodlad, 1984). It is argued that problem-solving and other intellectual skills are difficult to incorporate into the traditional environment due to the very nature of the educational system. Factors such as space, the grouping of students according to grades, and the duration and size of classes all hinder the desired environment. Technology enhanced learning is not the 'silver bullet' solution to the problems encountered in the education system, but it can provide a necessary balance to some of the limitations experienced with the traditional approach.

Technology Enhanced Teaching and Learning

Technology enhanced learning refers to the enhancement of learning using information and communication technology (ICT), with the added benefit of helping students to develop new skills with digital tools along the way (Klemke & Specht, 2013). Technology, in this instance, plays a significant role in making learning more effective, efficient, or enjoyable (Goodyear & Retalis, 2010). In the literature it is often termed *e-learning* and it can support the educator and learner in a number of ways. For example, differing learning styles can be catered for so that educators can reach more students in a variety of ways, this subsequently enhances the number of students able to learn the course material (Sulcic & Lesjak, 2001). It is imperative when an organization or university decides to implement an e-learning initiative that they develop an effective solution that recognizes the need for good learning practices, by incorporating good design and development guidelines (Sulcic & Lesjak, 2001) – such as the learning dimensions advocated by Reeves and Reeves (1997) for interactive learning and collaboration. Active learning approaches, such as case-based learning and problem-solving, have long been advocated as ways of fostering deeper learning (Healy & Neville, 2009; Boyce