ABSTRACT

Students of higher education are complaining about their online courses or faculty perhaps because universities are pushing to have classroom lectures converted to virtual learning delivery methods but without hiring qualified professors and failing to train faculty to effectively teach online. Different skills are required to effectively teach online courses as compared to lecturing in the classroom. To examine this problem, the author discusses the results of a mixed-methods research design consisting of an experiment followed by constructive feedback analysis. The experiment measured student grades from a standard teaching approach as compared with applying constructivism theory in the same online course at a university. The student outcome effect size for the treatment group was substantial and the analysis of constructive feedback evidence from the students was moderately supportive of the teaching approach.

INTRODUCTION

Online virtual learning is increasing in demand due to the changing needs of students who are working (Strang, 2017a), facing high debt and struggling to balance family with professional life (Strang & Shimer, 2017). The problem is according to student ratings and accreditation assessments, many universities offer very low quality online courses and/or they employ incompetent faculty to teach them (Arbaugh et al., 2009; Strang, 2016b).
There are many cases of poor online programs or unethical faculty conduct reported in the media for USA-based degree-mill institutions such as Corinthian College, University of Phoenix, and others (Levin, 2018; Costin & Hamilton, 2009; Popovich & Neel, 2005). There are numerous negative student reviews of online courses taught at USA-based public universities (Collegeconfidential, 2019; Niche, 2019; Ratemyprofessors, 2019; Studentsreview, 2019; Unigo, 2019).

Public universities have an additional challenge not faced by the private institutions: A lack of revenue (Collegeconfidential, 2019). Therefore, professors in public universities must be creative and strategically innovative in order to leverage learning theories to design and teach online courses in a way to appease emerging virtual learner demands. According to a virtual learning meta-analysis, many studies claim classroom pedagogy best-practices are effective when applied to online courses (Tallent-Runnels et al., 2006). In fact, a number of comparative empirical studies prove that online teaching can be just as effective as face-to-face instruction (Ginns & Ellis, 2007; Laurillard, 2007; Strang, 2015b; Strang, 2016a; Strang 2016b, Strang 2016c).

Contrary to the above, some researchers assert that simply imitating direct instruction in a virtual online course fails to motivate students to deeply learn knowledge as compared to direct in-person dynamic lectures (Joint, 2003; Strang & Vajjhala, 2017). More so, claims of effective online pedagogical strategies may be defective because they ignore confounding variables (Joy & Garcia, 2000). Furthermore, some courses may be more difficult to teach online than in the classroom due to their complex content (Arbaugh, 2005), especially in predominately quantitative fields like operations research or engineering (Affouf & Walsh, 2007; Cybinski & Selvanathan, 2005; Swan, 2003). Therefore, stakeholders need more information about what works when teaching online courses with applied content such as in the operations research field.

The objective of this chapter is to discuss the findings from a controlled experiment examining if constructivism learning theory can be more effective than not using it to teach a virtual online course in the operations research field. The purpose of the experiment was to measure the academic effectiveness of a constructivist instructional methodology applied to an online project management course, as compared to the traditional approach used to teach the same course online by another faculty. Independent student constructive feedback was collected from an online rating system and analyzed to explain what worked well and what did not. The aim of the chapter is to generalize the findings to faculty and management of universities in USA who offer online courses. Additionally, accreditation panel members, academic researchers and students may be interested in these findings.

Background

The phrase ‘virtual online learning’ is often used synonymously with online education, distributed learning, networked learning, web-based learning, and distance education (Weller, 2007). As applied to this study a virtual online learning environment is an educational delivery system and accompanied by a methodology or pedagogy for effectively teaching the material to students while leveraging technology to provide asynchronous and/or synchronous learning activities (Naidu, 2002; Strang, 2017b). A few researchers have experimented with Second Life and other gaming type technology as a way of delivering online courses to university students but this is not an effective pedagogy according to any scholarly literature (Helling, Dumire & Augustosky, 2009) and it is ineffective at contemporary universities for online instruction (Strang, 2014; Arbaugh, Godfrey, Johnson, Pollack, Niendorf & Wresch, 2009; Bernard, Abrami, Lou, Borokhovski, Wade & Wozney, 2004), and it is not considered further in this chapter.