Chapter IX
Validation of E-Learning Courses in Computer Science and Humanities: A Matter of Context

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ABSTRACT

In order to offer a unified framework for the empirical assessment of e-learning (EL), this chapter presents findings from three studies conducted at a comprehensive technological university. The first, an archival study, centers on student performance in undergraduate computer science and humanities courses. The second study, a survey given three times within EL classes, investigates the variables of learning style, general expectation, and interaction in student performance. The third study investigates student performance on computer-mediated information literacy. Taken together, these three studies—focusing on archival, process, and performance-based techniques—suggest that a comprehensive assessment model has the potential to yield a depth of knowledge allowing shareholders to make informed decisions on the complexities of asynchronous learning in post-secondary education.
INTRODUCTION

The aim of this chapter is to present evidence derived from three studies of e-learning (EL) targeting student outcomes. The studies were undertaken to identify a profile for potential success and support policy guidelines for limiting registration and course enrollment. This aim is achieved through discussion of three studies that were conducted at a comprehensive technological university in the United States, where EL has historically been offered as an asynchronous, online alternative to traditional face-to-face classes, with content management systems such as Webboard, WebCT and Moodle providing a “virtual classroom” environment. The difference in persistence and success rates between the two modes of course delivery, however, are comparatively lower for online sections. The first study is archival and centers on student performance in undergraduate computer science and humanities courses. The second study, a survey distributed three times within humanities EL courses, investigates the variables of learning style, general expectation, and interaction in student performance. The third study investigates student performance on computer-mediated information literacy tasks. Our findings confirm not only that students in EL sections lack the required technical and information literacy skills to succeed. Taken together, these archival, process, and performance-based techniques warrant a unified framework for the empirical assessment of EL. Our findings suggest that a comprehensive assessment model has the potential to yield a depth of knowledge allowing shareholders to make informed decisions on the complexities of asynchronous learning in post-secondary education.

New Jersey Institute of Technology (NJIT) has a history in e-learning (EL) beginning in the 1980s when researchers in the university’s Department of Computer and Information Science created and deployed the Electronic Information Exchange System for use in the original Virtual Classroom™ (Hiltz & Turoff, 1993). In 2002, with computing education at its enrollment height, approximately three-quarters of the 150 EL class sections (15-week semester cohorts) offered were in computer science or information systems at the undergraduate and graduate levels. Today, with 5,585 undergraduate students and 2,822 graduate students enrolled in the fall of 2008, demand for EL remains strong, and the disciplinary distribution of the approximately 60 EL sections offered during the current academic year is balanced among majors in computer science, information systems, information technology, and management; several of the university’s general university requirements in humanities are, as well, offered in an EL format. All class teachers are historically committed to delivering high quality instruction, and all are committed to an empirical base for decision-making regarding the evaluation of these courses to facilitate positive student outcomes in terms of success with courses and degree completion (Foster, Bower, & Watson, 2002).

This chapter presents our efforts—through archival studies, surveys, and performance measures—to come to terms with the complexities of offering E-Learning courses. Within an environment that would be, in mission and vision, ideally suited to successful asynchronous instruction, it might be imagined that all measures would report incomparable success, yet such is not the uniform case. While much has been gained in our understanding of the complex variables and validation processes involved in justifying information, much remains to be done (Millwood & Terrell, 2005). Our studies reveal that a triangulated model is promising when a variety of shareholders investigate what really happens in asynchronously offered undergraduate courses.

ARCHIVAL STUDY: TWO DISCIPLINES

Research on rates of student success in EL classes tends to be drawn from single samples. Yet comparison of two disciplines—one invested in re-