

Chapter 21

Evaluating a Professional Development Program for Course Redesign With Technology: The Faculty End–User Experience

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ABSTRACT

This study evaluated a California State University Course Redesign Professional Development program, focusing on the user experience of STEM faculty as they learned about technology and applied their learning to develop technology-enriched instructional strategies that enhanced students' own educational experiences. Data were collected from the first two academic years of the professional development program. A conceptual framework that melded andragogy, Technological, Pedagogical, and Content Knowledge (TPACK), Diffusion of Innovation, and Communities of Practice theories were used to analyze archived professional development training content and faculty-produced electronic portfolios. The findings demonstrate that faculty collaborative processes in the online training and in site-based collaborative efforts were the main aspect of the course redesign program that facilitated technology integration, instructional development, and positive student learning outcomes.

INTRODUCTION

Higher education institutions have increasingly diversified their student populations to meet societal needs, and enrollment from degree granting institutions have increased 24% from 16.6 million to 20.6 million (U.S. Department of Education, 2015). In that context, there is an emphasis on utilizing technology in an effort to increase student engagement and achievement for personalized learning (Feldstein, Hill, & Cavanagh, 2015) and to accommodate student demand (Straumsheim, 2015). Institutions are gradually moving away from simply putting content online to creating a digital strategy, and course redesign has been a well-documented process in which institutions seek to develop thoughtful and purposeful ways of integrating technology and instructional strategies (Stokes, 2015) in response to these challenges (Hudson et al., 2015).

Course redesign is the process of redeveloping a course using information technology capabilities (Twigg, 2005), with the intention of achieving and sustaining improved learning outcomes at a lower cost. A common strategy of course redesign is to facilitate active learning using a technological platform. Students can utilize online assignments for on demand practice and immediate feedback, and faculty can use student performance data from the assignments to tailor instruction (Horn, Kane, & Wilson, 2015). Online environments can also increase student interaction that would be otherwise difficult in a large traditional lecture.

The National Center for Academic Transformation (NCAT), which is an independent not-for-profit organization that provides leadership in using information technology to redesign learning environments, has tracked the impact of course redesign projects. Their research noted a total of 195 redesign projects that have been initiated, 80% of which were completed. These redesigns impacted about 250,000 students annually. Of the 156 completed projects, 72% were reported to have increased student engagement and increases in overall semester GPA. Overall, these redesigns reduced their instructional costs by 34% on average, ranging from 5% to 81%. Many of these efforts to engage students and ensure positive student learning outcomes are part of a national movement to redesign courses.

Course Redesign in the Context of the California State University

There is an increasing demand to attend a California State University (CSU; comprised of 23 campuses). In 2016, there were 407,122 applicants and 281,859 admitted. In CSULB alone, there were 96,025 applicants with 31,857 admits in 2015, and 102,168 applications and 32,512 admits in 2016. The CSU Office of the Chancellor analyzed 1.4 million course sections from all 23 CSU campuses and identified 22 areas of high enrollment and low success, with many of the courses coming from the Science, Technology, Engineering, and Mathematics (STEM) disciplines. The CSU Office of the Chancellor is supporting faculty in course redesign in order to maximize access, reduce time to degree, improve graduation rates, and shrink the achievement gap. Since the summer of 2013 Course Redesign with Technology has funded a total of 654 faculty from all 23 CSU campuses redesigning 580 courses in over 20 different disciplines.

The purpose of the CSU Course Redesign with Technology program is to train faculty on ways to implement instructional strategies such as flipped classrooms, online homework, virtual labs, and hybrid formats in their courses. The efforts from this program are designed to support course redesigns that address bottlenecks specific to a campus. Faculty who participate in this program learn to model their courses after faculty who have redesigned their courses on the campus level, have documented increases in

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