

An Institutional Approach to Course Redesign at a Hispanic-Serving Institution

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Abstract

As with many higher education institutions, Fresno State struggles with graduation rates. The overall six-year graduation rate for first-time, full-time freshmen hovers around 50 percent. The graduation gap between the two largest ethnic groups, White (55.6) and Hispanic (43.5), was 12.1 percentage points in 2012. This article reports on the experience of using course redesign as a strategy to increase graduation rates, especially among Hispanic students.

Located near the geographic center of California, Fresno State has a one hundred-year history of serving the Central San Joaquin Valley of California and is one of twenty-three campuses in the California State University system (CSU). The city of Fresno's population is approximately 500,000 and 50.9 percent Hispanic. Fresno State's enrollment is approximately 22,500, 38.8 percent of whom are Hispanic. Overall, 72 percent of students are first generation, and over 50 percent of students require remediation in math or English.

In 2010, the CSU launched a system-wide graduation rate initiative. The stated goals of the initiative are to raise the graduation rate across the system to 52 percent (an eight percentage-point increase) and close the gap for under-representative minority students by half (<http://graduate.csuprojects.org/home>). As part of this system-wide initiative, Fresno State has engaged in a number of activities designed to increase graduation rates. One of these areas is course redesign.

What Is Course Redesign?

As a practice, the faculty have always engaged in some level of course redesign. Anytime course content or delivery modality is modified, course redesign is happening at some level. Most course redesign today begins with the seminal work of Carol Twigg and the National Center for Academic Transformation (NCAT). According to NCAT, "Course redesign is the process of redesigning whole courses (rather than individual classes or sections) to achieve better learning outcomes at a lower cost by taking advantage of the capabilities of information technology" (www.thencate.org).

Despite the acceptance of the NCAT model at several other institutions, our campus struggled with this definition for several reasons. First, we offer many multiple instructor courses that are frequently taught by non-tenure track faculty. Second, partly

in strong support of academic freedom and partly due to a decentralized course content decision-making culture, it is not possible to mandate that all sections of a multi-section multi-instructor course undergo course redesign. The NCAT definition also places a strong emphasis on the reality of the fiscal impact of course redesign.

On our campus, as on other campuses, there is some resistance to the perceived movement of higher education to embrace “business” practices (Hansen 2012). Interestingly, both critics (Arum and Roska 2010) and proponents (Horn 2012; TEDx Talks 2011) of higher education emphasize the need for innovation in our universities. Our approach has been to emphasize first, and almost exclusively, student learning. This is the mission of our institution and is the guiding principle of any initiative. Any course redesign effort needs to have the intent of positively impacting student learning. Student learning, in turn, should be related to student success (for example, grades) in a course. As more students successfully complete a course, fewer faculty resources are required for that course. These resources can then be utilized in other areas. On our campus, it is estimated that we save \$5,000 for every thirty-five students who do not have to retake a course.

Our working definition of course redesign is “any effort to enhance student learning using active learning pedagogy.” This definition is designed to encompass all levels of information technology use and other pedagogical strategies such as collaborative learning, service learning, and peer evaluation.

Identifying Key Courses for Redesign

Prior to determining our method for course redesign, senior campus administrators identified courses that consistently proved difficult for students. These courses were initially defined as high enrollment and high failure rate courses. High enrollment courses included any course with a student enrollment of 100 or greater. To arrive at this figure, we collapsed multiple sections of courses. High failure rate courses were defined as those courses with a grade of D or F or withdrawal (DFW) rate of 30 percent or higher. In order to easily compare across courses, a summary index was developed that multiplied these two figures together. We considered, for example, the question: Is a course with a student enrollment of one hundred and a DFW rate of 50 percent more critical than a course with an enrollment of 275 and a DFW rate of 35 percent? The indices for these two example courses would be 50 and 95.25 respectively. The summary index represents the actual number of students who are not successful in a given class. Those courses with a higher index were deemed more essential to consider for redesign.

Our campus went on a three-year journey before settling on a faculty support model for course redesign. Our first foray into course redesign sent a team of biology faculty to an NCAT conference. Importantly, there was no requirement that these faculty embark on a course redesign effort. Fortunately, a faculty champion for course redesign emerged from the group. As a result of attending the conference, the high enrollment, high failure rate, non-major biology course underwent redesign. One of the

key elements and outcomes of any course redesign is the process that faculty engage in to view their courses from a fresh perspective. The biology team asked itself a fundamental question, “What is it that we want these non-biology major undergraduate students to know about biology when they leave this course?” The team was cognizant of the fact that in all likelihood, this would be the last time these citizens were going to have a formal course in biology and faculty wanted the material to be relevant for the students. The outcome of the redesign is discussed below, along with other redesigned courses.

Title V Support Expands the Work of Course Redesign

Although sending a group of faculty to the conference was successful for us, this process was not cost effective. Our next approach involved bringing an NCAT consultant to campus to work with a group of faculty. This second effort was funded by a U.S. Department of Education Title V—Hispanic Serving Institution (HSI) grant. At this time, we were still utilizing the NCAT course redesign definition.

Our campus is proud to have been designated by the federal government as an HSI. For the first time in the university’s one hundred year history, Hispanics now represent the largest student group in terms of enrollment. In October 2010, the U.S. Department of Education awarded Fresno State with a five-year Title V—HSI grant to expand or enhance the academic offerings, quality, and support programs with the goal of improving student achievement and academic success. The Title V—HSI program at Fresno State is charged with developing campus-wide initiatives to specifically address the needs of a diverse student body.

The most unique aspect of the Title V—HSI program is the strong partnership between Academic Programs and Student Affairs. The academic efforts focus on partnering with faculty to improve classroom instruction while using student engagement and active learning activities. The student services efforts focus on providing direct student support through prescribed academic interventions and student development activities to promote academic, career, and professional development, while also encouraging student persistence to graduation. Both aspects work synergistically to fundamentally change the university and increase student success.

The Title V—HSI funding has been a tremendous aid in providing institutional and financial support to promote student engagement and improve student retention and graduation rates.

Course Redesign Retreat

Several faculty teams, which consisted of multiple instructors who taught the same course, participated in a two-day course redesign retreat prior to the start of the spring 2011 semester. The retreat was facilitated by an NCAT consultant who had led a

course redesign effort at her own campus. The retreat included a presentation of foundational NCAT course redesign material, many examples of course redesign from other campuses, and an outline of a course redesign process. There was considerable and engaged dialog among our faculty members, academic affairs leaders, and the facilitator about the role of higher education in general, the motivation for course redesign, and who is responsible for student success. There also was time allotted for the faculty teams to begin to talk about what their course redesign might entail.

One of the challenges we encountered after the two-day course redesign retreat was a lack of systematic support structure in place for faculty who participated in the retreat. It was unclear to faculty what was being asked of them; who would help them be successful; and how anyone would measure success. NCAT provided very good external encouragement and support as we took these initial steps, but the lack of structure led to some frustration on the part of faculty and administrators.

This lack of structure was in part due to two significant circumstances. First, the Title V—HSI grant had only been awarded two months prior to the course redesign retreat. Staff and resources were still in the beginning phase of implementation, consequently there was no specific plan in place or set of expectations on how to move from a retreat environment to an actual course redesign plan. Secondly, our internal faculty support structure at that time was primarily divided among technology driven and more traditional teaching and learning entities. This structure led to some role confusion regarding faculty support.

Despite these challenges, faculty teams did successfully redesign five courses in 2011. Having learned a considerable amount about how we might improve and sustain course redesign on our campus from our two initial efforts, we created a new vision for course redesign.

The Teaching Innovations Academy

Two sister CSU institutions, Chico and Sacramento, began supporting faculty course redesign efforts using a multi-week teaching academy in 2009 (<http://www.csuchico.edu/academy/index>). Borrowing heavily from these initial efforts, Fresno State designed a two-week Summer Teaching Innovations Academy, which was first offered in 2012.

While we were still very interested in supporting course redesign in high impact courses, we did not focus faculty recruitment on those courses. Rather, we cast a wide net. Prior to marketing the academy directly to faculty, the first author of this article met with the academic deans to describe the program to them. As is the case at Chico State, the deans were integral in determining which courses and faculty would gain access to the academy.

Ultimately, all faculty were invited to apply for the Summer Teaching Innovations Academy. Priority was given to faculty who taught high enrollment (over one hundred

students per semester), traditionally challenging (pass rate less than 70 percent), multiple-section, multiple-instructor, gateway courses. Because this effort was funded by a Title V—HSI grant, graduate level courses were not eligible. For this initial cohort, tenured and tenure-track faculty were encouraged to apply. The incentive for participation was a \$5,000 stipend and funding for a tablet (for example, iPad). Primary funding for this first cohort was provided by the Title V—HSI grant. Supplemental funding was provided by the Technology Innovations for Learning and Teaching unit (faculty support center) on campus. Applicants needed the support of their department chair and dean prior to submission of their application.

Once the applications were submitted, each college dean prioritized the courses from his/her college based on the academy goals and the college's goals. Forty-three faculty members teaching a total of thirty courses applied for the academy. Thirty-two faculty members teaching eighteen courses were accepted.

The academy was designed around two primary goals. First, we placed a primary emphasis on teaching and learning, and a secondary emphasis on technology. Second, we wanted faculty to leave the academy with some work already done for their course redesign. Consequently, academy's time was divided among three primary areas: pedagogy, teaching and learning tools, and redesign time. Importantly, these three areas interacted throughout the academy. For example, in a session on creating screen captures (in multimedia tutorials or presentations) some faculty would have time to actually create a short screen capture understanding how, pedagogically speaking, a screen capture aids student learning.

One of the critical aspects of the academy was the intentional development of course redesign teams. Faculty members were assigned to an instructional designer. Additionally, faculty members spent time with other faculty leaders and academic technology staff developing personal resources that could be tapped as the course redesign process evolved.

The highly interactive and cross-disciplinary nature of the academy created a burgeoning teaching and learning community. Although no specific or standard element of course redesign was required, one explicit goal of the two-week academy was for faculty to leave the intensive work period with an actual product in hand, a learning module, learning object, collaborative student experience, anything that was part of their redesign. At the end of each week, faculty teams created a multimedia report documents to share with each other. These documents were shared with the faculty teams' department chairs and deans and contained information about their academy experience and what their course redesign plan entailed.

What Is Changing in the Courses?

We emphasize the importance of acknowledging and building on the teaching expertise faculty members have developed over the course of their careers. Consequently, we do not restrict any faculty member's approach to course redesign.

The NCAT website provides a variety of examples of course redesign. The three presented here reflect what has happened on our campus and include varying levels of technology to support improvement in student learning.

As previously noted, the first course redesigned on our campus was a non-major biology course. This redesign did not explicitly involve any technology. In evaluating why students were having difficulty in passing the course, faculty determined that students were struggling with the lab part of the course. The lab included traditional lab work (for example, dissection), quizzes, and exams. It should be noted that this is a different question than asking, “What elements of content are students having difficulty learning?” As faculty took a fresh at look at the desired learning outcomes for this non-major course, they determined that it would better serve our students and the mission of our university if the emphasis of the course shifted from memorization to understanding and applying course content to “live” issues about which students cared and made a difference in their lives or our community. For example, one student, with an interest in horses, developed a brochure on how to avoid and deal with a mosquito-spread disease that plagues horses. Another student, developed material on how to eradicate a pest that infests citrus plants, a key agricultural product in our region.

There is growing literature and set of examples of the “flipped classroom” (Berrett 2012; <http://www.knewton.com/flipped-classroom/>). One instructor redesigned her business statistics course by using the flipped classroom approach. Using the learning objectives as a foundation for redesign, she identified a vast array of web resources tied to each learning objective. For example, Kahn Academy tutorials were used as a content delivery system. Students viewed traditional lecture material prior a given class. During the in-class time period, students spent considerably more time working collaboratively on problem sets (traditional homework). This approach enabled the teacher to identify trends in understanding, provide targeted support to students, and make the class come alive. To date, increases in student learning are promising.

In a pre-calculus course redesign, emphasis was placed on a proprietary publisher-provided math tutorial software program. The instructor reported that his lecture time was reduced by at least half with the remaining time left for students to work through elements of course content using the software program. The program enabled the instructor to closely monitor each student’s progress. Students were encouraged to ask each other and the instructor questions if they could not master a given concept. Additionally, the last fifteen minutes of most class sessions were dedicated to a short quiz designed to assess concept mastery. When asked about how this course was different from a traditional course, one student responded, “The teacher knows whether I’m getting it or not before the test comes.” Importantly, the teacher now knows when a student is struggling, and can provide targeted support.

Impact of the Redesign

Across two semesters, the six redesigned courses impacted a total of 4,644 students. Initial results indicate that both pass rates and average grades increased for each course.

Specifically, pass rates increased overall from 70.9 percent to 83.0 percent, with an average increase of 18.0 percent. At these improved pass rates, a total of nearly six hundred more students passed the redesigned courses than in previous semesters. Over time, such increases will equate to fewer repeated courses, less time to graduation, and more time and money saved by both students and the university. Similarly, overall average course grade point averages increased from 2.11 to 2.55, a 21.1 percent increase. We believe this suggests that students are more engaged in these redesigned courses and, accordingly, learn the content more effectively and perform better.

Interestingly, overall results were most promising for underrepresented minority student groups. For example, Hispanic students had the highest average pass rate increase of 24.4 percent, and an average course grade point average increase from 1.93 to 2.43 (27.1 percent). Out of these results has grown a theory that our course redesign working model is potentially more effective if the student's culture and/or values align with the redesign. For instance, a student with a more collectivistic or group-oriented value set will likely thrive and get more out of group assignments than a student who prefers a standard lecture format.

While these are course-level results, there may eventually be effects on retention and graduation. If a student is able to demonstrate learning in a gateway course, then that student has the opportunity to continue his/her education. Not getting through the gate may very well mean the end of one's college education either because of academic disqualification or failure to meet a prerequisite necessary to make degree progress. There are also possible effects on self-efficacy and social belonging regarding college degree attainment that may have long-term effects on students' persistence, overall performance, and graduation (Walton and Cohen 2011).

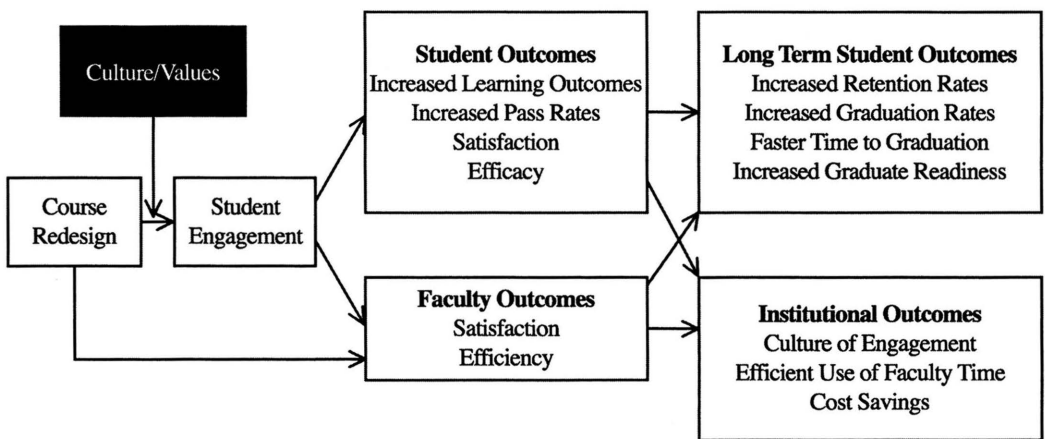
Why Is It Working?

There is evidence that increased faculty-student interaction, collaborative learning, and active learning, which are all potential outcomes of course redesign, are associated with student success (Armbruster et al. 2009; Umbach and Wawrzynski 2005). While we hoped for and anticipated that course redesign would have positive impact on students, we were surprised by the notable differences among ethnic groups. There are numerous definitions of culture as it relates to groupings of people. Regardless of the definition, culture affects one's sense-making, thinking, and behavior in numerous ways (Singelis et al. 1995; Triandis 1995). Hofstede's (1980) taxonomy of five cultural dimensions is one of the more prolific approaches to examining culture. One interpretation of the impact of culture is that while a given cultural dimension (for example, collectivism) is found to be common (but not universal) to a specific group of people from a given culture (for example, Latino), that dimension is not reserved only for that group. In fact, there are a number of cultures on any campus that may more strongly reflect collectivism (such as Latino, Asian American, or African American) than individualism (for example, traditional United States' culture). The logic of including a cultural/value match between course redesign and student outcomes is this: a redesign enables and/or requires students to work together (group

work, peer evaluation, collaborative learning, and out-of-class communication tools including course content), and students whose culture and values align with said strategies may learn more than they otherwise would and subsequently perform better in the course.

The second explanation for the differential increased performance of Latino students is statistical in nature. While all students may increase learning and performance toward some theoretical ceiling level, historically underperforming students have further to go toward that ceiling (it is unrealistic to think that all students will learn all material or earn As). Therefore, we may see larger increases toward that ceiling in early course redesign efforts.

Although this currently is a working model, we hope to empirically test this model of cultural values in upcoming semesters with these redesigned courses.



Concerns Going Forward

As with any grant-funded initiative, there is a concern about sustainability. Title V—HSI grant funding began a paradigm shift at Fresno State, and led to the institutionalization of course redesigns efforts. Faculty participation in the Teaching Innovations Summer Academy was overwhelming; more faculty wanted to participate than we could accommodate with Title V—HSI grant funds.

Based on the early course redesign successes and faculty reports regarding the academy’s success, a proposal for the President’s Excellence Funds was submitted. As a result, the course redesign initiative was awarded monies to double faculty participation and impact more courses for course redesign for the 2013 Teaching Innovations Summer Academy. Also, while it is not a primary goal of course redesign on our campus, as more students improve in their learning and earn more passing grades, the institution may realize cost savings. For example, on our campus the instructor cost of an average thirty-five person three-unit course is approximately \$5,000. For two semesters, the cost savings of the six redesigned courses presented

here equates to almost \$85,000. These savings continue to accrue every semester, making the initial investment in course redesign quite reasonable.

Another issue of sustainability is continued faculty support once the initial course redesign effort is complete. While we support and monitor the official first offering of a redesigned course, course redesign is a continuous effort. We have seen the occasional need for substantive changes after the initial redesign, especially in the second semester of the course offering. This, of course, is to be expected. Some aspects of redesign work, some may not work as planned, some faculty discover new strategies, and some faculty gain greater confidence in their original plan and may build on it further. Regardless of the reason for the additional course innovations, faculty members require on-going instructional designer and/or technology support.

In this analysis, we have focused on the redesign efforts of tenured/tenure-track faculty. Nearly half of our courses are taught by full- and part-time lecturers. In many instances, faculty are long-term employees and can anticipate continuing assignments teaching the same courses. However, these assignments are not guaranteed. Additionally, many of the faculty have multiple teaching assignments at different institutions. As we expand our course redesign efforts to include more lecturers, we are asking chairs to assign faculty involved in course redesign to teach the target course for at least two semesters.

Conclusion

Ultimately, faculty must drive the course redesign process and appropriate administrative support also must be in place. For example, on our campus course redesign is part of the university's strategic plan and part of our information technology strategic plan. Administrative support includes providing moral support and public recognition, faculty incentives for course redesign, and appropriate instructional design and technology support.

Academic integrity and rigor must be maintained. Some faculty members perceived that course redesign would simply dumb down a course so that more students pass. We found that best way to ameliorate this concern is to have faculty who actually engage in redesign to tell their own stories. From a faculty-supported perspective, we always begin redesign with student learning objectives. Once faculty define those learning objectives, then we can begin the conversation about how best to meet those objectives using new and active technology strategies.

Closely related to learning objectives is the topic of assessment. In some cases, one of the most challenging pieces of redesign is the manner in which student learning is assessed. For example, is a multiple choice test (or other technique) the best assessment tool for a particular learning objective? This is not to say that traditional single best-response assessments are not useful in many cases. Course redesign means working with faculty to identify ways to best measure the knowledge, skills, and abilities they want students to gain from the courses they teach.

Lastly, technology must be built-in from the beginning as appropriate. First, technology must be in service to the learning objectives and pedagogy of the course. Second, learning about application of technology is sometimes a learning outcome for the faculty and the students. For example, in a school of business it may be important for students to learn how to effectively interact with others using computer-mediated communication. Third, do not assume that students are comfortable with or even know how to use a specific technology in the educational environment. Fourth, anyone who operates at the edges of their abilities and technology will fail at some point. We must encourage experimentation and innovation, and learn from course redesigns that do not work out as planned.

As with any significant change effort, our course redesign journey has included some significant successes and processes that could have been greatly improved. In this summary of our journey, we hope to have shared enough of our experience that others could benefit. Each institution will have its own administrative and institutional cultural nuances to consider if it chooses to engage in a significant course redesign effort. We have found our experience to date to be extremely positive. Beyond that actual implementation of course redesign, this effort has generated focused dialog teaching and technology.

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