

Student Success at UNC Charlotte

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Large Course Redesign

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An increasing number of institutions of higher learning across the nation are turning to Large Course Redesign as an affordable means to advance student success. By fundamentally restructuring the learning environment, the general goal of Large Course Redesign is to enhance student engagement and improve grades, retention rates, and ultimately, graduation rates, while also reducing costs and increasing efficiency. Two particular areas of concern related to student success at UNC Charlotte that Large Course Redesign seeks to mitigate are student retention rates and on-time graduation. Success in these areas, however, will not be without their challenges.

In 2009, the Center for Teaching and Learning asked UNC Charlotte students to express their opinions about large courses in a series of interviews. Students responded that while large courses give them opportunities to meet a diverse body of students, they dislike that the structure of such courses impedes the cultivation of personal relationships with professors. Many students feel anonymous or faceless in large courses, and it is this feeling of anonymity and isolation that discourages them from seeking assistance when needed. If students do not feel they can ask for help with introductory material, their performance and grades often suffer. Low grades adversely affect retention rates, and a D, F, or W (withdraw) in one or more courses adversely affects a student's ability to complete his or her degree or graduate on time. Research has shown that even a C in an introductory course can indicate that the student will have difficulty with more advanced material in later courses. Moreover, withdrawing from and repeating courses are expensive for both students and UNC Charlotte.

In order to describe the successful implementation of Large Course Redesign at UNC Charlotte, this working paper discusses approaches taken to Large Course Redesign at institutions of higher learning across the United States. It then discusses specific models applied to courses at UNC Charlotte. The discussion of specific outcomes of course redesign projects includes the effect on DFW rates, costs, student success and satisfaction, and professional development. Finally, this report presents possible future directions for Large Course Redesign at UNC Charlotte.

Improving Student Learning and Reducing Costs

Approaches to Large Course Redesign Nationally

The multiple challenges facing American colleges and universities—improving the quality of undergraduate education while increasing accessibility and reducing costs—are interrelated. The solutions are also intertwined, according to Carol Twigg, one of the leading scholars on Large Course Redesign¹. One solution that universities are increasingly exploring is the use of technology to enhance student learning. Twigg admits that

implementing these technologies to begin to address contemporary challenges facing universities “requires a fundamental shift in thinking” away from the assumption that the only viable model for classroom instruction is the professor-centered approach featuring regularly scheduled meeting times and places.

In practice, redesigned courses often combine a large keynote lecture by an experienced faculty member with smaller, engagement-focused sessions in which students receive more individual attention, and are assessed through frequent online assignments and quizzes. These smaller sessions are often led by graduate teaching assistants. A similar model of blended learning “is the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies,” combined in a way that exploits the strengths of each ². Instructors often use a blended model when redesigning large courses. Instructional technologies drive Large Course Redesign and create possibilities for addressing the challenges of stretched budgets, increasing enrollment, and bottlenecks in popular introductory courses.

The National Center for Academic Transformation, an independent, non-profit organization that specializes in the use of information technology to redesign course curriculum, offers several models for Large Course Redesign ³ that:

- Redesign the whole course
- Encourage active learning
- Provide students with individualized assistance
- Build in ongoing assessment and prompt, automated feedback
- Ensure sufficient time on task and monitor student progress

The key to successful, comprehensive Large Course Redesign is strategic implementation—using technology, resources, and faculty time and expertise wisely so faculty and departments are not burdened by redesign projects. It is for this reason that Twigg suggests targeting large introductory courses for redesign. A high percentage of undergraduates tend to be enrolled in a relatively small, manageable number of courses in a few academic areas. Initial initiatives to improve a small number of courses can affect a large number of students. Introductory courses, she argues, often have standard curricula and provide the concepts and information for advanced study. These introductory courses are, therefore, ideal initial candidates for course redesign projects ⁴.

Positive outcomes of Large Course Redesign projects nationwide include:

- Improved grade distribution
- Increased retention of discipline-specific knowledge
- Enhanced engagement and interaction
- Improved student and faculty satisfaction
- Increased enrollment
- Increased flexibility in course design
- Reduced cost

Challenges to implementing Large Course Redesign projects nationwide include:

- Increased workload preparing the first semester of the class
- Unclear expectations or direction for students
- Difficulty engaging with the technology
- Difficulty securing classroom space

Specific examples of these outcomes are represented in a table (see Appendix 1) depicting Large Course Redesign projects at universities across the United States (in blue), within the UNC System (in yellow), and at UNC Charlotte’s peer institutions (in green).

Large Course Redesign at UNC Charlotte

Across the UNC Charlotte campus, departments are implementing large course redesign projects using creative technologies to improve learning outcomes for students, reenergize faculty, and reduce costs. A large course is unofficially defined as a course containing over 75 students per section in multiple sections. Redesign efforts targeted large introductory courses because these courses are often required for students to advance in a particular major. Departments focused on increasing student access to these courses to reduce bottlenecks and facilitate timely degree completion. Large Course Redesign at UNC Charlotte is a long, involved process requiring the commitment and collaboration of all participating faculty and administrators to design and implement the plan that will best fit the needs of the department. This three-to five-year process involves collecting data on existing course design and student performance, acquiring or developing common materials, piloting a redesign effort, and continuously evaluating and improving the redesign project. With the exception of Biology, the redesign efforts discussed below received an initial \$25,000 grant from Academic Affairs and the Center for Teaching and Learning (CTL) (<http://teaching.uncc.edu>) to support research and development for the projects. The CTL has assisted five departments in redesigning large courses following the NCAT guidelines. Redesigned courses include:

- First-Year Spanish
- Physics for Engineering and Science
- Principles of Chemistry I
- General Psychology
- Issues of Health and Quality of Life

The Departments of Political Science, Accounting, and Africana Studies are in the process of working with the CTL to redesign introductory courses. The following sections will outline six Large Course Redesign projects at UNC Charlotte and the contributions these courses have made toward boosting student success and improving institutional efficiency.

Two first-year **Spanish** courses (SPAN 2101 and 2102) comprised the first Large Course Redesign project at UNC Charlotte, gaining national recognition as a participant in NCAT's Committed to Redesign program. The Spanish program was interested in increasing access to introductory Spanish by efficiently increasing enrollment capacity. The redesign increased the size of each section from 30 students to 60 students, and reduced lecture time from twice a week to once a week, and students were encouraged to attend supplemental instruction session in lieu of the second lecture. A newly-adopted e-textbook was used for the online portion of the course. Redesigned lesson plans feature face-to-face sessions that promote communicative activities in the four language skills: reading, writing, listening, and speaking. Lecturing, particularly about grammar, was removed from the face-to-face sessions and placed in online modules. An oral exam was implemented to reflect the communicative approach of the new hybrid courses.

The redesign of **Chemistry** 1251, Principles of Chemistry, attempted to reduce DFW rates from the traditional rate of over 50%, to increase knowledge retention for subsequent chemistry courses, and to adapt course material to the diverse learning styles and background preparation of students. The complete project uses a supplemental, web-enhanced model, with three components: 1) a class structure that retains the same number of meetings, 2) technology-based, out-of-class or online activities and assessments, and 3) and smaller, 75-minute Team Approach to Successful Learning (TASL) workshops in place of traditional lectures. TASL workshops, limited to 20 students, allow students to be actively involved in problem-solving strategies and collaborate with their peers in a small-group environment. TASL workshops are led by Learning Coaches, students who successfully completed CHEM 1251 and expressed an interest in helping their peers learn. Before facilitating TASL workshops, Learning Coaches are required to take a one-credit training course preparing them to facilitate discussion sections effectively. This training course is co-taught by faculty in both science education

and chemistry. Before each large lecture, students watch weekly pre-lecture videos online and confirm their comprehension of pre-lecture material through a low-stakes online quiz. In addition, students will be required to master concepts and problem-solving skills through online homework after an in-depth presentation of material in the lecture.

In 2012, UNC Charlotte was awarded a Robert Noyce Teacher Scholarship Program grant from the National Science Foundation to enhance the expertise of secondary education majors pursuing careers as chemistry and physics teachers. The departments of physics and chemistry, in partnership with the College of Education and Charlotte-Mecklenburg Schools, will use the “Learning Coach” model to engage UNC Charlotte’s most accomplished chemistry and physics students in peer instruction. An aspect of the CHEM 1251 redesign is directly linked to a primary activity of the NSF Noyce grant; Chemistry and physics students will be trained as learning coaches to lead small-group discussion sessions among their peers. The NSF Noyce grant similarly involves Physics and their large course redesign incorporating small-group problem solving sessions.

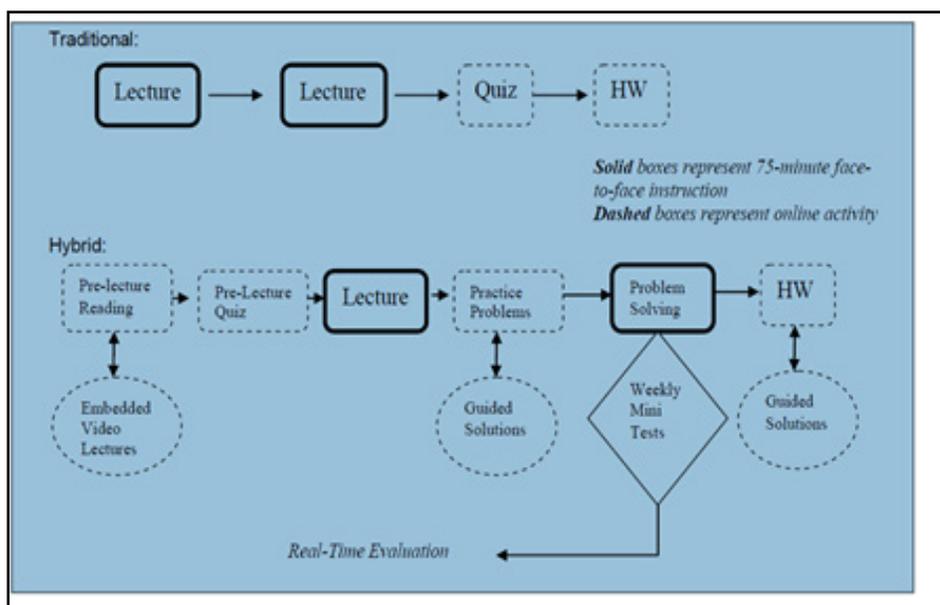


Fig.1. Physics Redesign Flow Chart

half attended lecture on Wednesday, thus the population size of each lecture actually decreased. The hybrid or blended course format makes students responsible for exposure to the material through online activities and assessments that are completed prior to class. One 75-minute lecture per week, delivered by a faculty member, summarizes content and addresses misconceptions, subtleties, connections, and applications of the course material. The second 75-minute lecture was replaced with problem-solving sessions conducted by trained graduate teaching assistants who have earned the highest grades in their fields. Each session accommodates 30 to 40 students and offers opportunities for small group interaction and personalized attention. The redesign project introduced discrete tasks with goals, deadlines, pre-lecture assignments and quizzes, regular weekly feedback, peer mentoring, and interactive learning.

The goals of the redesign of **Liberal Studies**, Issues of Health and Quality of Life (LBST 2214), were to increase opportunities for student discussion of course material, promote consistent course content across sections and instructors, reduce dependence on part-time faculty, and leverage resources to accommodate continued enrollment growth. The redesign model divided in-class course time into larger keynote sessions led by faculty members and smaller discussion sections led primarily by doctoral students, resulting in fewer sections taught by temporary instructor hires and more mentored teaching experiences for doctoral students. In the three semesters since course redesign, LBST 2214 had 28 sections with an average of 72.9 students in each section. The LBST 2214 redesigned course for Fall 2010 created four sections with enrollments of 190 students each. Within

The **Physics** Department fundamentally redesigned four introductory courses. Enrollment in introductory Physics courses increased by more than 40% over the past 5 years, fueling a need to improve the efficiency with which the department can enroll students without putting further strain on faculty resources and the Department’s budget. The redesign increases student enrollment in ten sections from 110 to 160 students per section. Although the enrollment capacity per section increased, half of those 160 students attended lecture on Monday, and the other

each section, the students were divided into five discussion groups of 38 students each. The smaller discussion group sections allowed for engagement activities such as debates, Think-Pair-Share discussions⁵, and group presentations. Online discussion groups were also implemented as part of the redesign.

The **Psychology Department** also transformed a large lecture course with 300 students per section meeting twice per week into a hybrid course in which half of the material is taught online. The course meets “face-to-face” in a large lecture format once a week for 1 hour and 15 minutes, and during the remaining course time, students complete online activities using the electronic textbook (or e-textbook), MyPsychLab (Pearson Education).

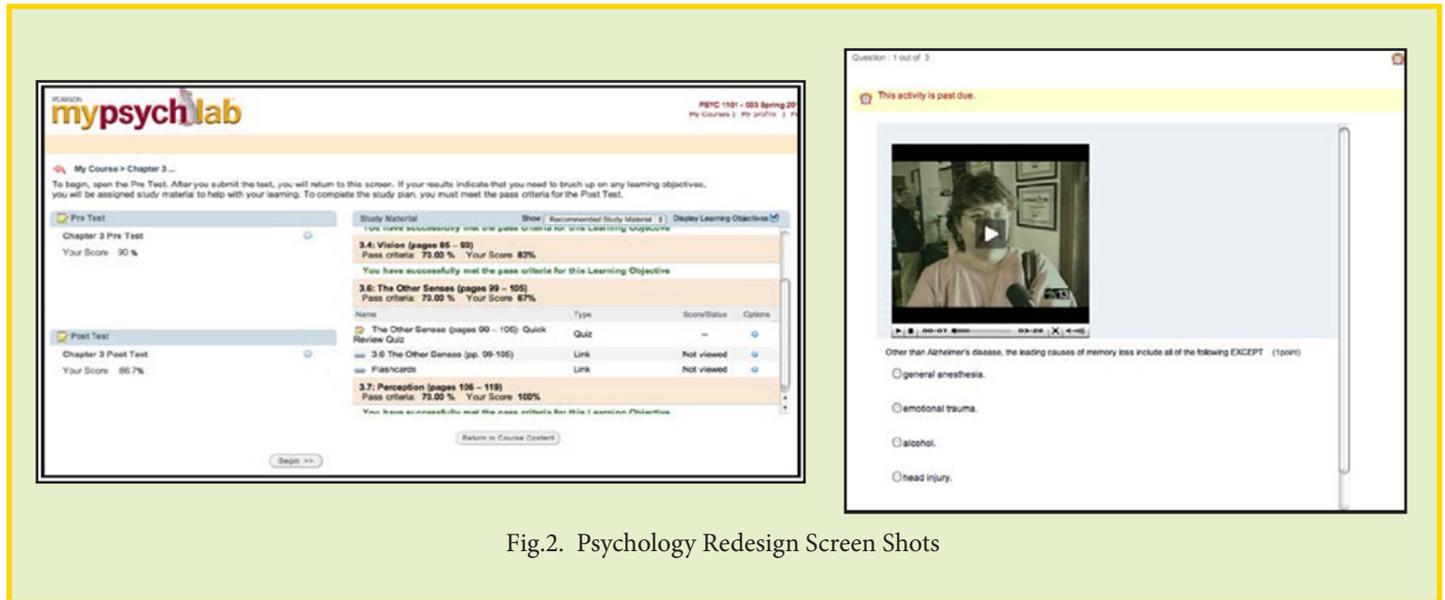


Fig.2. Psychology Redesign Screen Shots

Finally, Drs. Jennifer Warner and Jason Flores, lecturers in the **Department of Biology**, independently tackled the monumental task of redesigning Principles of Biology (BIOL 1110) and General Biology (BIOL 2120). Approximately 1,100 students each year enroll in BIOL 1110 as a general education science course, many of whom are not science majors. As the first course in the pre-biology major, BIOL 2120 enrolls approximately 400 students per year. Because many students who enroll in BIOL 2120 have completed biology courses in high school, they often underestimate the amount of preparation required to be successful at the college-level. BIOL 2120 has highest DFW rates at UNC Charlotte with almost 70% of new Freshmen earning either a D, an F, or withdrawing from the course. To cultivate critical thinking and creative problem-solving skills in scientific situations, Warner and Flores transformed the two Biology courses to develop a student-centered approach. They worked with course instructors to design lesson plans that revise key learning outcomes and encourage active engagement. The course redesign creates an environment in which instructors foster peer interactions by building more opportunities for group work into the lesson plan. The department reduced the number of students in course sections, established math pre-requisites, created freshman-only sections, strengthened the supplemental instruction program, developed the Center for Academic Resources in Biology (CARB), and provided training in the new course structure and outcomes for faculty. A peer mentoring group helped to improve below-average midterm grades.

Effects of Large Course Redesign on Grades and DFW rates

One goal of Large Course Redesign is to radically restructure the way courses are taught so that students are able to engage with course material in diverse formats, retain and build on information throughout the semester, and transfer knowledge to other courses and life situations. By offering multiple ways to engage with and retain

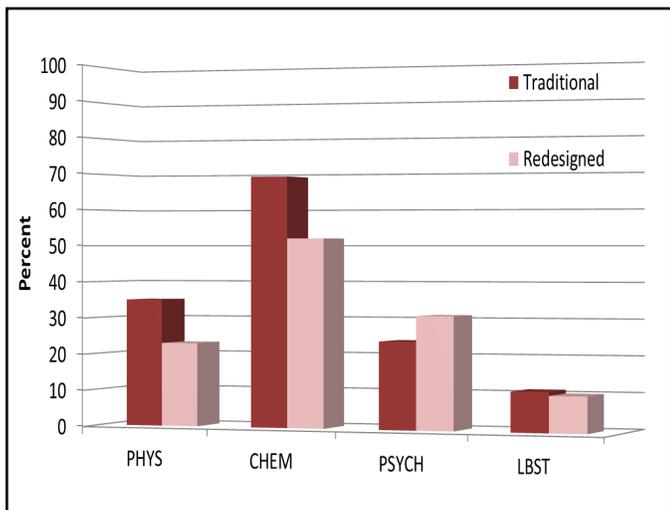


Fig. 1. Change in DFW Rates

material, Large Course Redesign reflects an effort to improve grades and reduce DFW rates. High DFW rates and low exam scores reflect a disconnect between teaching and assessment methods often used in large introductory courses and the critical thinking skills students must develop to be successful in the field. Weekly online assignments and low-stakes testing combined with small-group discussion sessions enable students to critically interact with course material in ways that supplement traditional lectures. Frequent assessment encourages students to stay on top of course readings and ensures that progress is closely monitored so that students who need help are identified. Small group interactions enable students to work through difficult material with their peers as they teach and learn

from each other. These pedagogical shifts strengthen students' knowledge retention, leading to better grades and lower DFW rates.

As a result course redesign efforts, exam scores in both the Physics and Psychology courses improved. However, in Psychology, retention rates were higher in the traditional section compared to the two hybrid (redesigned) sections. The first hybrid section taught had the same withdrawal rate as the traditional course, but the second hybrid course had three times as many students withdraw. Instructors involved in the Psychology redesign project hypothesize that some students may have had an initial adverse reaction to the hybrid format causing them to withdraw from the course early in the term, before the midterm grade reports. These early withdraw rates might indicate the need to create an orientation program that assists students with the hybrid format at the beginning of the semester. Redesigned Chemistry DFW rates decreased in both sections of CHEM 1251. In the second section, the percentage of students earning Ds and Fs decreased but withdraws increased by 9.5%. This increase in withdraws could reflect the number of students who, through frequent assessment, decided to drop the course before receiving a failing grade.

In first-year Spanish, learning outcomes for both the traditional and the redesigned course sections were similar. The DFW rate for the first redesigned course in Fall 2010 increased 5% when compared to the three previous Fall semesters, yet the redesigned second-semester Spanish of Spring 2011 reflected a DFW rate comparable to the three previous Spring semesters.

Effects of Large Course Redesign on Costs

Another goal of Large Course Redesign is to reduce the costs of providing quality undergraduate courses by increasing the efficient use of classroom space, faculty time, and institutional resources. Participating departments and instructors report varying results that, by some measures, Large Course Resign at UNC Charlotte has reduced departmental costs, however, participating departments acknowledge that significant instructor commitment, as well as resource investment and reallocation is required up front. The \$25,000 grants administered by the Center for Teaching and Learning address some of these costs.

Cost Savings

As student enrollment rapidly increases, classroom space and financial resources are becoming more limited. Large course redesign allows for the creative use of technology and virtual space, reducing the need for physical space and resulting in cost reduction without diminishing the educational quality of courses offered. For example, the Psychology Department was able to serve a greater number of students while releasing classroom

space it no longer needed. Course redesign allowed the Spanish program to reduce face-to-face instruction by half and to double enrollment in each section, thereby reducing the need for physical space and instructors by half. The decrease in Chemistry's DFW rates means that fewer students will need to repeat CHEM 1251, resulting in a decrease in the overall cost of offering the course in another semester.

Course instructors also noticed a reduction in the time it takes to prepare for each class, thus allowing them to focus on other professional development areas. Instructors for the Spanish redesigned course noticed a reduction in the amount of time needed to prepare lectures and grade assignments. The redesigned LBST course eliminated the reliance on part-time faculty who were previously teaching three-quarters of course sections and costing \$24,000-\$36,000 annually in salaries. Finally, the adaptation of common syllabi, final exams, e-textbooks, and learning objects across all sections of a redesigned course can reduce costs and time spent on course preparation.

Redesigned Physics courses have an enrollment capacity of 4,000 students, an increase of 45% over traditional courses. The total cost of redesigned Physics courses is an estimated \$92 per student compared to the cost of traditional courses which is \$134 per student; a cost savings of 31% per student.

Cost Increases/Investments

In some cases, the logistics of implementing Large Course Redesign can require an investment in infrastructure and a reallocation of human resources that must be carefully considered. During the pilot semester of the Psychology course redesign, each instructor spent more time preparing the new course than would normally be the case with the traditional course. Instructors anticipate that the time commitment associated with establishing the new redesigned course will eventually be reduced. The cost of employing learning coaches in the Chemistry courses must also be more carefully calculated when determining savings. Handling technology challenges associated with creating hybrid or blended courses must also be factored into the cost of implementing course redesign.

Student Learning and Satisfaction

Large Course Redesign attempts to address some of the concerns students have about enrolling in large introductory courses. Some redesigned models address students' concerns of anonymity by replacing a large lecture with smaller discussion groups. Online discussion forums encourage students to interact with and learn from each other. Other redesign models use online platforms to make information more accessible to students and increase the frequency of low-stakes assessment. While these course designs attempt to create more opportunities for engagement and critical thinking, students have reported mixed satisfaction results. Students are often accustomed to courses that feature instructor-centered pedagogies and assessment models that promote the short-term memorization and regurgitation of course material. However, for students to succeed as scientists, community leaders, and intellectuals after graduation, it is important that they develop critical thinking and creative problem-solving skills in the classroom.

A survey of the Spring 2011 redesigned Physics 2101 course revealed that students thought the course was effective overall. Likewise, in three separate student surveys in Psychology (Fall 2011) that rated course effectiveness, 259 of 332 students would recommend the format to friends. Almost 60% of students in the redesigned first-semester Spanish course indicated that they wanted to take their second-semester Spanish course in a hybrid format. Biology students expressed increased satisfaction with the course on end-of-semester evaluations. Anecdotally, upper division faculty members believe students are better prepared for advanced science courses after the redesign. Assessments are needed to verify anecdotal information.

Professional Development for Graduate Students

The Center for Teaching and Learning reports that Large Course Redesign has re-invigorated faculty members by creating the opportunity to teach introductory material in exciting new ways. Graduate students and undergraduate Learning Coaches also have more opportunities to gain valuable classroom and material development experience through redesign efforts. Teaching assistants play a vital role in the success of Large Course Redesign, and departments must secure funding to support teaching assistants. Cost savings in other areas (i.e. increased student enrollment and reducing reliance on part-time faculty to teach large sections of the course) can allow departments to support graduate and undergraduate teaching assistants in redesigned courses.

Future Directions

In order to strengthen the success of Large Course Redesign, this report proposes the following actions:

Communication

Faculty and administrators must communicate the importance of creating student engagement opportunities in the classroom and must promote Large Course Redesign as a method of enhancing student engagement. Instructors must communicate the goals of Large Course Redesign to students so that they understand the reasons and theories behind common approaches developed and the active learning theory applied. Students must be reminded of the resources available to help them succeed in redesigned courses. All students should understand that they must take responsibility for their own learning, but this is particularly important for students taking lower division courses early in their academic careers. Assignments must be structured to direct students to resources until students come to understand the value of these services, and feel comfortable accessing them in other contexts. For example, the LBST resource room was not heavily utilized by students with less than 2% of students actually visiting the space for assistance with the course. Course redesigns must incentivize their use in the grading structure.

Technology

An integrated technology platform for Large Course Redesign would be useful. Instructors indicate that working within three virtual environments (publisher's virtual site, email, and Moodle) causes confusion, fatigue, and has a negative impact on users' time.

Interaction with the Professor

Instructors and administrators should explore ways to increase interaction between students and the professor delivering the keynote lectures for the course. Students report that this lack of interaction is one of the primary drawbacks of taking large courses. In redesigned Psychology courses, instructors reported increased interaction with students, but it was predominantly in the form of solving technology problems rather than in scholarly engagement with course material. Also, instructors might experiment with ways to assess attendance in the large keynote lectures and face-to-face meetings. Psychology instructors noticed the average attendance in these components of the course was between 25-40% of the total enrollment. Attendance is a key early warning indicator for student success.

Expanding Large Course Redesign

The Center for Teaching and Learning collaborates with departments to continuously collect data and reassess the redesign process at UNC Charlotte. The CTL is also committed to providing ongoing professional development opportunities for faculty and administrators including inviting redesign scholars to campus to give workshops, and organizing symposia or poster sessions where faculty and administrators can present best practices and success stories.

In expanding Large Course Redesign at UNC Charlotte, administrators should distinguish redesign projects

for large multi-section courses with a common format from courses where the instructor is working more independently; the University's approach to these redesign projects will be different. One of Large Course Redesign's most significant components involves faculty and administrative collaboration to effect a large number of students. If instructors work to redesign one course independently, the efficiency and ability to see effects on a large scale may be reduced. The University might consider connecting individual course redesign efforts under a common umbrella of student engagement through blended learning, and communicate the goals of this common approach to students. By structuring courses so that students come to class better prepared and take more responsibility for their own learning, redesigned courses can reinforce student behaviors that lead to successful degree completion. Increasing the number of courses that promote active learning communicates the message that the University expects these behaviors in all classes.

Notes

¹ Carol A. Twigg, "Course Redesign Improves Learning and Reduces Cost" *The National Center for Public Policy and Higher Education: Policy Alert*, June 2005.

² D. Randy Garrison and Norman D. Vaughan, *Blended Learning in Higher Education: Framework, Principles, and Guidelines* (San Francisco: John Wiley & Sons, Inc., 2008), 148.

³ "What we Do," National Center for Academic Transformation. Accessed September 1, 2012. <http://www.thencat.org/>.

⁴ Carol A. Twigg, "Course Redesign Improves Learning and Reduces Cost" *The National Center for Public Policy and Higher Education: Policy Alert*, June 2005.

⁵ In Think-Pair-Share discussions, the instructor gives students a question to ponder individually for a few moments, then pairs the students up to discuss the question for several minutes. After discussion, each pair then shares its ideas with the rest of the class.

Institution	Program	Positive Outcomes	Negative Outcomes
Purdue University	2012-- IMPACT, Instruction Matters: Purdue Academic Course Transformation, is a Provost-led initiative designed to fund research-based course redesign. --cohorts of faculty participate in weekly workshops and work in a partnership with a development team to transform their courses. Of the 49 courses currently undergoing transformation, 39 are from STEM fields.	Student Success --redesigned courses improved grade distribution, discipline specific knowledge emphasized in classroom activities, attendance, and engagement Student Satisfaction —improved student satisfaction	-- the current SCALE-UP rooms are extremely popular and are insufficient to meet the needs of the entire IMPACT faculty especially the STEM course instructors -- lack of full commitment to the program
Miami University of Ohio	2006--The TOP 25 Project was launched in 2006 to redesign courses with the largest enrollments. --active and inquiry-driven approaches to learning; --methods to engage students in their learning and with other learners; --specific approaches that result in improved student critical thinking or problem-solving skills; --reduce the amount of class time spent on low-level memory or descriptive material by incorporating innovative approaches to facilitate students learning this material outside of class	Student Success --both faculty and students perceive that the course redesigns are encouraging a learner-centered learning environment Student Satisfaction -- students surveyed in both redesigned and traditional courses are equally satisfied with their learning and with their courses; and both reported positive relationships with faculty Professional Development --90% of faculty report that they enjoy teaching the redesigned courses and are comfortable teaching them	-- faculty participating in the redesign perceived increase in workload
University of North Texas	2010--NGen Project—“never-ending course redesign --carefully crafted student learning outcomes that include higher level learning linked to departmental goals --assessment plan with test items --research-based blend of instruction approaches: --large-group lectures --media-rich interactive online environment --small-group experiential learning --\$12,000 grant for each course	Student Success --cognitive development Student Satisfaction --positive attitude toward the course subject --preference for NGen courses Professional Development --important to have leadership involved	--lack of rewards for improvement --second-class status of NGen courses --logistical constraints --entrenched and comfortable pedagogy

<p>North Carolina State University</p>	<p>2008-- three sections of an introductory engineering graphics course were delivered using a hybrid or blended instruction. The asynchronous, online component of the course consisted of voiced-over content presentations, software demonstrations, and sketching videos. During the weekly face-to-face meetings, faculty highlighted the important concepts for the next lesson, gave brief constraint-based CAD demonstrations, covered ideation and technical sketching techniques, and checked homework.</p> <p>--hybrid sections met face-to-face only once per week. The instructors used this time to discuss and demonstrate key solid modeling topics, check homework, and answer questions about assignments. Students were required to view the online content before coming to class. They also completed most of the sketching activities outside of class.</p>	<p>Student Success--no difference was found between the final exam scores in the hybrid sections and the face-to-face sections.</p> <p>--students used multiple strategies for completing the assignments.</p> <p>--analysis of midterm exam scores revealed no difference between the hybrid and face-to-face sections. Students in the hybrid sections scored significantly higher on the final exam than students in the face-to-face sections.</p>	<p>-- students could navigate through the materials in any order. Faculty was unable to track the order or the amount of time spent within the site. This could account for the number of students who did not elect to use the online materials. Placing these links within a learning management system will allow faculty to track student progress more accurately.</p>
<p>UNC Chapel Hill</p>	<p>2011--Psychology 101 is one of the University's highest enrollment courses and is generally taught in large sections of several hundred students each. Psychology Department piloted a blended section of its Psychology 101 course. The blended section was taught one Psychology faculty member and a control section using a more traditional format was taught by another. A comparative assessment was conducted by the Center for Faculty Excellence.</p>	<p>Student Success--no significant difference in the overall student's final exam scores was noted between the Spring 2011 blended section (M=86.92, SE=0.47) and the same instructor's Spring 2010 traditional section (M=87.44, SE=0.71).</p> <p>--students in the blended section (64.1%) were more likely to report having completed the assigned readings before class than students in the traditional section (46.1%). A significant relationship was found between students who always or usually completed their readings before class and their overall course grades.</p> <p>-- students in the blended sections have generally performed just as well or better on measures of content knowledge than those in traditional sections.</p> <p>Student Satisfaction-- 82.8% of students in the blended section perceived the class format to be a good or very good fit for them.</p>	<p>--any potential cost savings associated with replacing lecture time must be weighed against the cost of maintaining key components of each course</p> <p>--while the Psychology Department's use of academic credit to compensate senior undergraduate recitation leaders may represent a scalable approach, the cost of preparing recitation leaders must also be taken into consideration</p>
<p>UNC Greensboro</p>	<p>2011--Math Emporium is an approach to teaching mathematics that eliminates class meetings and replaces them with a learning resource center featuring online materials and on-demand personalized assistance.</p> <p>--the Emporium model requires mandatory attendance in a computer lab (3 hours weekly) where students engage in tasks related to course content and receive one-to-one assistance from tutors and instructors.</p>	<p>Student Success-- DFW rate for participating sections was 41.7%, an improvement compared to previous years</p>	

	<p>--mandatory weekly group meetings enable instructors to follow up where testing has identified weaknesses or to emphasize specific concepts or applications.</p> <p>Key to the success of the Math Emporium is the active learning that takes place, the adaptive software that monitors student learning, and the increased one-to-one support that students receive from tutors and faculty in the lab.</p> <p>--UNCG implemented the Emporium model, piloting in one section each of Math 115 - College Algebra and Math 150 – Precalculus I in both the Fall and Spring semesters of 2011-2012.</p>		
Portland State University	<p>2003-- Portland State originally planned to increase section size in the redesign in order to increase the number of students served. Based on experience during the 2002-03 academic year, the team decided to maintain section size at a lower level and to increase the number of sections as well as the number of students. Because of seat-time reduction, the number of sections could be doubled in the same physical space with a small increase in personnel.</p> <p>-- Spanish grammar presentation, grammar drills, listening comprehension and reading comprehension exercises were delivered online, allowing class interaction to focus on student-student oral communication</p> <p>--synchronous CMC (chat) resembles interpersonal oral discussion and asynchronous CMC (message boards) resembles presentational, formal written discourse. Students were required to work in chat groups to learn about each other and to report this information on message boards.</p>	<p>Student Success-- end-of-year oral exam scores showed improvement: redesign = 87.3 %, traditional course = 85.8 %.</p> <p>--the amount and quality of information exchanged (communicative use of Spanish) exceeded that of most face-to-face discussions. The depth and extension of communication strengthened both student-student relations and student-teacher relations.</p> <p>Cost-- automation relieved graduate teaching assistants from menial, repetitive and non-satisfying labor, while increasing the number of students they could facilitate and monitor.</p> <p>--the number of students increased from 690 students served in the traditional format to about 1270 in the redesigned course.</p> <p>-- using computer-based resources allows more learning to take place within the classroom, thereby reducing the amount of time faculty need to spend in office hours and extra student appointments.</p>	
University of New Mexico	<p>2003-- UNM has one of the nation's most diverse student populations and one of the lowest student retention rates among public research universities. General Psychology enrolls 2,250 students in nine sections each year. UNM's primary redesign goal is to improve the course's 42% DWF rate (30% of which represent failures, a disproportionate number of which are minority students.)</p> <p>Traditional course: -- lecture format with no recitation sections.</p> <p>Large Course Redesign:</p>	<p>Student Success --the percentage of redesign students at UNM who received a grade of C or higher was 77 percent for fall 2002 and 74 percent for spring 2003 versus an average of 61 percent for the traditional course. In addition, there were more grades of A than found in traditionally taught sections.</p> <p>-- requiring quizzes was essential to increased student performance. On in-class exams, students who were required to</p>	

	<p>--1 lecture and a weekly 50-minute studio session led by undergraduate teaching assistants (UGTAs) in computer labs.</p> <p>--UGTAs received As in previous sections of General Psychology or who are upper-division honors students.</p> <p>-- interactive hybrid Internet/CD-ROM activities, quizzes, and programmed self-instruction offered on a 24/7 schedule.</p> <p>--students will take repeatable quizzes each week requiring a C-level of mastery, course management software will enable the team to track student learning proficiency.</p> <p>--graduate teaching assistants will monitor quiz performance and will contact and counsel students who fail to achieve a C level of performance as to how to improve.</p> <p>-- UNM originally planned to reduce the number of lectures per week to one. There was considerable and sustained student protest to the announcement that there would be only one lecture per week. In subsequent implementations, two lectures were offered.</p> <p>--UNM incorporated ULAs recruited from students who received A's in the previous semester. The role of the ULAs was to work with students who scored 75% or less on the first exam, administered at the end of the third week, in weekly 50-minute studio sessions for the remainder of the semester.</p>	<p>complete quizzes for credit always outperformed students for whom taking quizzes was voluntary. The former also received more As, Bs, and Cs and fewer C- or below grades.</p> <p>--during studios, students worked on multimedia course material, took quizzes, learned a memorization strategy, and discussed their course performance with the ULAs. The more studios students attended, the better their course performance.</p>	
<p>Western Michigan University</p>	<p>2011--Redesign of an introductory business course delivery to a hybrid style "inverted classroom," which devotes classroom time to active learning and assigns reading and videotaped lectures for completion outside class. In 75 minute class meetings each week, faculty and part-time business-oriented instructors work with 24 students per section to clarify and reinforce concepts through discussion of related current events and a group problem-solving exercise.</p>	<p>Student Success--the high level of interaction identified in all three data analyses points to a high level of engagement and learning.</p> <p>--most students like the way the course is taught with abundant student interaction and a facilitator (rather than a lecturer)</p> <p>--Respondents are motivated to attend class, and enjoy the classroom interaction.</p> <p>--students describe themselves as typically prepared for class</p> <p>Student Satisfaction--Students' satisfaction with the class is high.</p> <p>--A clear majority of students favor the new format, but not all liked the reformatted delivery in its entirety.</p>	<p>-- 83% of suggestions for improvement fell under the Course Design category. Within that category, students' responses varied from complaints about the "talking-head" videos to specific evaluative measures (i.e., exams, quizzes, current events), and to the absence of comforting study guides.</p> <p>--32% of these suggestions urged a return to the lecture format, and 15 % advocated getting rid of the videos.</p>