The National Center for Academic Transformation

Five Principles of Successful Course Redesign

From the 120 course redesign projects conducted at NCAT partner institutions, we have identified six course redesign models. Each of these models embodies five principles that lead to successful course redesign, and each of these principles has both a quality dimension that contributes to improved student learning and a cost dimension that contributes to reduced instructional costs. The following principles are essential to achieving success in course redesign.

Principle #1: Redesign the whole course.

In each model, the whole course--rather than a single class or section--is the target of redesign. The course is treated as a set of products and services that can be continuously worked on and improved by all faculty rather than as a "one-off" that gets re-invented by individual faculty members each term. The collective commitment of all faculty teaching the course coupled with the capabilities provided by information technology leads to success. Information technology enables best practices to be captured in the form of interactive Web-based materials supported by sophisticated course-management software. Faculty can systematically incorporate feedback from all involved in the teaching and learning process, adding to, replacing, correcting and improving an ever-growing body of learning materials and best practices.

Improving Quality

Any large introductory course taught by multiple instructors faces the problem of "course drift," especially when the instructors are adjunct faculty members. The phrase "course drift" refers what happens when individual instructors teach the course to suit their individual interests rather than to meet agreed-upon learning goals for students, resulting in inconsistent learning experiences for students and inconsistent learning outcomes. Redesign that ensures consistent content coverage means that all students have the same kinds of learning experiences, resulting in significant improvements in course coherence and quality control.

Reducing Cost

Redesigning the whole course eliminates duplication of effort on the part of instructors and creates opportunities for using alternate staffing patterns. Faculty begin the design process by analyzing the amount of time that each person involved in the course spends on each kind of activity, which often reveals duplication of effort among multiple faculty members. Faculty members teaching the course divide their tasks among themselves and target their efforts to particular aspects of course delivery. By replacing individual development of each course section with shared responsibility for both course development and course delivery, faculty can save substantial amounts of their time while achieving greater course consistency.

Principle #2: Encourage active learning.

Each redesign model makes significant shifts in the teaching-learning enterprise, making it more active and learner-centered. Lectures and other face-to-face classroom presentations are replaced with an array of interactive materials and activities that move students from a passive, note-taking role to an active-learning orientation. As one math professor puts it, "Students learn math by doing math, not by listening to someone talk about doing math." Instructional software and other Web-based learning resources assume an important role in engaging students with course content. Resources include tutorials, exercises and low-stakes quizzes that provide frequent practice, feedback and reinforcement of course concepts. In some instances, classroom meetings are partially or entirely supplanted by online learning activities; in others, active learning environments are created within lecture hall settings supplemented by out-of-class activities. In moving from an entirely lecture-based to a student-engagement approach, learning is less dependent on words uttered by instructors and more dependent on reading, exploring, and problem-solving undertaken actively by students.

Improving Quality

Encouraging active learning is a well-accepted pedagogical principle that leads to improved student learning. As Arthur W. Chickering and Zelda F. Gamson note in their 1987 Seven Principles for Good Practice in Undergraduate Education, “Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding.”

Reducing Cost

When redesigns reduce the number of lectures or other classroom presentations that faculty members must prepare for and present and replace those formats with interactive learning resources and team-based learning strategies, faculty time can be reallocated to other tasks, either within the same course or in other courses. Moving away from viewing instructors as the sole source of content knowledge and assistance to a greater reliance on interactive learning materials and greater student/student interaction offers many opportunities for reducing instructional costs.

Principle #3: Provide students with individualized assistance.

In traditional lecture or classroom formats, students are often unlikely or unable to ask questions. Office hours attempt to mitigate this problem, but students notoriously do not take advantage of them. Students need help when they are "stuck" rather than during fixed times or by appointment. Each model either replaces or supplements lecture time with individual and small-group activities that take place in computer labs--staffed by faculty, graduate teaching assistants (GTAs) and/or peer tutors—and/or online, enabling students to have more one-on-one assistance. Students cannot live by software alone, however. When students get stuck, the tutorials built into most software programs are not enough to get them moving again. Students need human contact as well as encouragement and praise to assure them that they are on the right learning path. An expanded support system enables students to receive help from a variety of different people. Helping students feel that they are a part of a learning community is critical to persistence, learning, and satisfaction.

Improving Quality

Offering students help when they need it rather than according to a schedule not only addresses the particular problems they encounter but also helps keep them on task. Students who are unable to receive help at the time they need it too often give up and do not complete the task that they have been assigned. In addition to providing individualized assistance to students, faculty and others responsible for the course can learn what areas are most difficult for students and can continuously improve the learning activities included in the course.

Reducing Cost

By constructing support systems of various kinds of instructional personnel, the projects apply the right level of human intervention to particular student problems. Highly trained, expert faculty members are not required for all tasks associated with a course. By replacing expensive labor (full-time faculty members and graduate teaching assistants) with relatively inexpensive labor, less expert (adjunct faculty members, undergraduate peer mentors and course assistants) where appropriate, it is possible to increase the person-hours devoted to the course and the amount of assistance provided to students.

Principle #4: Build in ongoing assessment and prompt (automated) feedback.

Increasing the amount and frequency of feedback to students is a well-documented pedagogical technique that leads to increased learning. Rather than relying on individual faculty members in small sections to provide feedback for students--a technique known to increase faculty workload significantly--, each model utilizes computer-based assessment strategies. In many cases, a large bank of problems for each course topic is built into instructional software, and assignments are graded on the spot. In other cases, publishers provide test banks that accompany textbooks, enabling faculty to create low-stakes mastery quizzes. Both techniques enable students to work as long as needed on any particular topic, moving quickly or slowly through the material depending on their comprehension and past experience or education. By automating the feedback process, every problem or question is graded, and students receive specific information about their performance. This, in turn, leads to more efficient and focused time on task and higher levels of learning. Building in ongoing assessment and automated feedback also lets faculty know how well students are (or are not) doing and take timely corrective action.

Improving Quality

Shifting the traditional assessment approach in large introductory courses, which typically employ only midterm and final examinations, toward continuous assessment is an essential pedagogical strategy. Students can be regularly tested on assigned readings and homework using short quizzes that probe their preparedness and conceptual understanding. These low-stakes quizzes motivate students to keep on top of the course material, structure how they study and encourage them to spend more time on task. Online quizzing encourages a “do it till you get it right” approach: Students can be allowed to take quizzes as many times as they want to until they master the material. Students need detailed diagnostic feedback that points out why an incorrect response is inappropriate and directs them to material that needs review. Automating assessment and feedback enables repeated practice as well as providing prompt and frequent feedback--pedagogical techniques that research has consistently proven to enhance learning.

Reducing Cost

The idea of giving students prompt feedback is a well-known pedagogical technique that leads to improved learning. Pedagogy in itself has nothing to do with technology. What is significant about using technology is that doing so allows faculty to incorporate good pedagogical practice into courses with very large numbers of students—a task that would have been impossible without technology. When instructors and/or teaching assistants are responsible for grading, typically they must make compromises such as spot-grading or returning composite scores to students. By replacing hand-grading with automated grading of homework, quizzes and exams, it is possible to reduce the cost of providing feedback while improving its quality. In addition, by assessing and aggregating what students do and do not understand, both individually and collectively, faculty are able to spend class time on what students do not know rather than wasting time on what they already understand, a great improvement over the one-size-fits-all lecture method.

Principle #5: Ensure sufficient time on task and monitor student progress

Each redesign model adds greater flexibility in the times and places of student engagement with the course. This does not mean, however, that the redesign projects are “self-paced.” Rather than depending on class meetings, the redesigns ensure student pacing and progress by requiring students to master specific learning objectives, frequently in modular format, according to scheduled milestones for completion. Although some projects initially thought of their designs as self-paced, open-entry/open-exit, they quickly discovered that students need structure (especially first-year students and especially in disciplines that may be required rather than chosen) and that most students simply will not make it in a totally self-paced environment. Students need a concrete learning plan with specific mastery components and milestones of achievement, especially in more flexible learning environments.

All projects have seen a fairly strong, direct correlation between student success and time on task. A frequently encountered problem was getting students to spend enough time on task working with the software. Some students were slow to log in, getting too far behind to catch up. Worse yet, some students never logged on. Most projects found it necessary to require students to log in at specific intervals and to spend a minimum amount of time working with course materials. Others established some form of early alert intervention system, whereby baseline performance standards were set and those who were falling too behind were contacted. Email can be used to post messages and communicate with students to encourage them to "come to class."

Improving Quality

As Arthur W. Chickering and Zelda F. Gamson note in their 1987 Seven Principles for Good Practice in Undergraduate Education, “Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty.” Even though we know that time on task is essential to effective learning, it is difficult for faculty members in traditional formats unaided by technology to ascertain how much time on task each student is actually spending and to take corrective action.

Reducing Cost

By replacing time-consuming human monitoring of student performance with course management software, it is possible to reduce costs while increasing the level and frequency of oversight of student progress. Sophisticated course-management software packages enable faculty members to monitor student progress and performance, track their time on task, and intervene on an individualized basis when necessary. Course management systems can automatically generate tailored messages that provide needed information to students. They can also communicate automatically with students to suggest additional activities based on homework and quiz performance, or to encourage greater participation in online discussions. Using course-management systems radically reduces the amount of time that faculty members typically spend in non-academic tasks like calculating and recording grades, photocopying materials, posting changes in schedules and course syllabi, sending out special announcements.

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Readiness Criteria

In thinking about possible courses to redesign, please answer the following questions:

1. Course Choice

Choosing the right course is the first step in a successful course redesign project. Courses that face academic or resource problems or both are the best targets. What impact will redesigning the course have on the curriculum, on students and on the institution—i.e., why do you want to redesign this course? Please be specific—i.e., provide data on pass rates, enrollment numbers, and so on.

2. Redesign Model

When you develop your redesign plan, you will be asked to select a redesign model. Please read "Improving Learning and Reducing Costs: New Models for Online Learning," available at http://www.theNCAT.org/Articles/NewModels.html, which describes six possible models. At this point in the planning process, which redesign model do you think would be most appropriate for your redesign? Why?

3. Assessment Plan

When you develop your redesign plan, you will be asked to select an assessment model. Please read "Four Models for Assessing Student Learning," available at http://www.thencat.org/PlanRes/R2R_ModAssess.htm, which describes four possible models. At this point in the planning process, which assessment model do you think would be most appropriate for your redesign? Why?

4. Cost Savings Plan

When you develop your redesign plan, you will be asked to select a cost reduction strategy. Please read "Cost Reduction Strategies," available at http://www.thencat.org/PlanRes/R2R_CostRed.htm, which describes a number of strategies for producing cost savings. At this point in the planning process, which cost savings strategy do you think would be most appropriate for your redesign? Why?

5. Learning Materials

Successful course redesign that improves student learning while reducing instructional costs is heavily dependent upon high-quality, interactive learning materials. Are the participating faculty members able and willing to incorporate existing curricular materials in order to focus work on redesign issues rather than materials creation? What learning materials are you thinking about using in your redesign?

6. Active Learning

Greater student engagement with course content and with one another, supported by information technology, is essential to achieving student success. Do the course faculty members have an understanding of and some experience with integrating elements of computer-based instruction into existing courses to support active learning?

7. Collective Commitment

A collective commitment is a key factor for the success and the sustainability of redesign projects. As part of the planning process, you have been asked to form an institutional team. Please describe the members of your team, the skills they bring to the project and what their roles will be in both the planning and implementation phases of the project.

SIX MODELS FOR COURSE REDESIGN SUMMARY

SUPPLEMENTAL MODEL

- Retains the basic structure of the traditional course, particularly the number of class meetings.

- May simply supplement lectures and textbooks with technology-based, out-of-class activities to encourage greater student engagement with course content and to ensure that students are prepared when they come to class.

- May add technology-based, out-of-class activities and also change what goes on in the class by creating an active learning environment within a large lecture hall setting.

Examples that Add Out-of-Class Activities and Do Not Change In-Class Activities

- Students use a two-disc CD-ROM--which contains interactive activities, simulations, and movies--to review and augment text material. Students receive credit for completing four online mastery quizzes each week and are encouraged to take the quizzes as many times as needed until they attain a perfect score. Only the highest scores count.

- An automated, intelligent tutoring system monitors students' work as during lab exercises, providing feedback when students pursue an unproductive path, and closely tracking and assessing a student's acquisition of skills—in effect, providing an individual tutor for each student.

Examples that Add Out-of-Class Activities and Change In-Class Activities

- Students review learning objectives, key concepts and supplemental material posted on the class Web site prior to class and complete online quizzes, which provide immediate feedback to students and data for instructors to assess student knowledge levels. During class, the instructors use a commercially available, interactive technology that compiles and displays students' responses to problem-solving activities. Class time is divided into ten- to fifteen-minute lecture segments followed by sessions in which students work in small groups applying concepts to solve problems posed by the instructors. Instructors reduce class time spent on topics the students clearly understand, increase time on problem areas, and target individual students for remedial help.

- A 200-student class meets twice a week in an auditorium. The first meeting focuses on an instructor overview of the week's activities. About a dozen discussion questions are posted on the Web. Students meet for one hour in small learning teams of 10-15 students (supervised by undergraduate learning assistants) to prepare answers collaboratively and to carry out inquiry-based team projects. Teams post written answers to all questions. At the second class meeting, the instructor leads a discussion session, directing questions to the learning teams. The instructor has reviewed all posted answers prior to class and devotes class time to questions with dissonant answers among teams.

REPLACEMENT MODEL

- Reduces the number of in-class meetings but does not eliminate all in-class meetings.
- Replaces (rather than supplements) some in-class time with online, interactive learning activities.
- Gives careful consideration to why (and how often) classes need to meet in face-to-face
- Assumes that certain activities can be better accomplished online--individually or in small groups--than in a face-to-face class.
- May keep remaining in-class activities more or less the same.
- May make significant changes in remaining in-class meetings.
- May schedule out-of-class activities in 24*7 computer labs or totally online so that students can participate anytime, anywhere.

Examples that Substitute Out-of-Class Activities for Some In-Class Time and Do Not Change In-Class Activities

- Reduce lectures from 3 to 1 per week (keeping 1 lecture the same) and change 2 recitation sections to 2 computer-studio labs, where students work individually and collaboratively on computer-based activities. Students are tested on assigned readings and homework using Readiness Assessment Tests (RATs) 5-7 times during the term for 30% of their grade. Students prepare outside of class by reading the textbook, completing assignments, and using Web-based resources. Students take the tests individually and then immediately in groups of four. RATS motivate students to keep on top of the course material and enable faculty to detect areas in which students are not grasping the concepts.

- Reduce lectures from 2 to 1 per week (keeping 1 lecture the same) and reduce discussion sessions from 2 to 1 per week. Substitute Web-based tutorial modules that lead students through a topic in 6 to 10 interactive pages. Then, a debriefing section includes questions that test whether the student has mastered the content. Diagnostic feedback points out why an incorrect response is not appropriate. Students can link directly from a difficult problem to additional tutorials that help them learn the concepts.

Examples that Substitute Out-of-Class Activities for Some In-Class Time and Change In-Class Activities

- *Spanish*: Reduce class-meeting times from 3 to 2 per week. Move grammar instruction, practice exercises, testing, writing, and small-group activities focused on oral communication to the online environment. Use in-class time for developing and practicing oral communication skills.

- *English composition*: Reduce class-meeting times from 3 to 1 per week and substitute 2 workshops. Use online resources to provide diagnostic assessments resulting in individualized learning plans; interactive tutorials in grammar, mechanics, reading comprehension, and basic research skills; and discussion boards to facilitate the development of learning communities. Use in-class time to work on writing activities.

EMPORIUM MODEL

- Eliminates all class meetings and replaces them with a learning resource center featuring online materials and on-demand personalized assistance.

- Replaces multiple sections with one large section of all students.

- Depends heavily on instructional software, including interactive tutorials, practice exercises, solutions to frequently asked questions, and online quizzes and tests.

- Allows students to choose when to access course materials, what types of learning materials to use depending on their needs, and how quickly to work through the materials.

- Uses a staffing model that combines faculty, GTAs, and peer tutors who respond directly to students specific needs and direct them to resources from which they can learn.

- Requires a significant commitment of space and equipment.

- More than one course can be taught in an emporium, thus leveraging the initial investment.

<u>Example with Open Attendance</u>

- An open attendance model can be used when students are highly motivated, respond well to greater flexibility and are accustomed to scheduling work in the emporium around their other course responsibilities.

<u>Examples with Required Attendance</u>

- Elements of required attendance should be added when students are not highly motivated, founder when faced with greater flexibility and are inexperienced in scheduling work in the emporium around their other course responsibilities.

- Mandatory attendance (e.g., a minimum of 3.5 hours in the emporium) ensures that students spend sufficient time on task.

- Mandatory weekly group meetings enable instructors to follow up where testing has identified weaknesses or emphasize particular applications. Group activities help build community among students and with instructors.

ONLINE MODEL

- Eliminates all in-class meetings and moves all learning experiences online.

- Adopts successful design elements of Supplemental, Replacement and Emporium models including Web-based, multi-media resources, commercial software, automatically evaluated assessments with guided feedback, links to additional resources and alternative staffing models.

What This Model Is Not

- Individual faculty members design and deliver multiple course sections, each of which is relatively small in size.
- Web-based materials are used largely as supplemental resources rather than as substitutes for direct instruction.
- Instructors are responsible for all interactions, personally answering every inquiry, comment, or discussion.
- Faculty members spend more time teaching online and interacting with students than in classroom teaching.

Example that Depends on Heavy Use of Instructional Software

- Software presents course content; instructors do not need to spend time delivering content.
- Software increases the amount and frequency of feedback to students. All assignments are graded on the spot.
- Software enables self-pacing: each student can work as long as needed on any particular topic, moving quickly or slowly through the material.
- Software provides a built-in tracking system that allows the team to know every student's status, both time-on-task and progress through the modules.
- May add a course assistant to address non-content-related questions and to monitor students' progress, thus freeing the instructor to concentrate on academic rather than logistical interactions with students.

Example that is Web-based

- Combines multiple sections into a single 800-student online section organized around four four-week modules, each taught by faculty who are expert in the topic of the module.
- Faculty members are responsible for content materials, quizzes, and exams.
- A course coordinator is responsible for overall course administration; graduate teaching assistants grade and respond to student problems.
- Students complete a pre- and post-quiz for each module. Links to additional required readings, audio and/or video files, and other resources are provided.
- Eliminates duplication of effort for faculty who divide tasks among themselves and target their efforts to particular aspects of course delivery.

BUFFET MODEL

- Customizes the learning environment for each student based on background, learning preference, and academic/professional goals

- Requires an online assessment of a student's learning styles and study skills.

- Offers students an assortment of individualized paths to reach the same learning outcomes.

- Provides structure for students through an individualized learning contract which gives each student a detailed listing, module by module, of what needs to be accomplished, how this relates to the learning objectives, and when each part of the assignment must be completed.

- Includes an array of learning opportunities for students: lectures, individual discovery laboratories (in-class and Web-based), team/group discovery laboratories, individual and group review (both live and remote), small-group study sessions, videos, remedial/prerequisite/procedure training modules, contacts for study groups, oral and written presentations, active large-group problem-solving, homework assignments (GTA graded or self-graded), and individual and group projects.

- Uses an initial in-class orientation to provide information about the buffet structure, the course content, the learning contract, the purpose of the learning styles and study skills assessments, and the various ways that students might choose to learn the material.

- Modularizes course content.

- May allow students to earn variable credit based on how many modules they successfully complete by the close of the term, thus reducing the number of course repetitions. Students complete the remaining modules in the next term.

- Eliminates duplication of effort for faculty who divide tasks among themselves and target their efforts to developing and offering particular learning opportunities on the buffet.

- Enables the institution to evaluate the choices students make vis a vis the outcomes they achieve (e.g., if student do not attend lectures, the institution can eliminate lectures)

THE LINKED WORKSHOP MODEL

- Retains the basic structure of the college-level course, particularly the number of class meetings.
- Replaces the remedial/developmental course with just-in-time workshops.
- Workshops are designed to remove deficiencies in core course competencies.
- Workshops consist of computer-based instruction, small-group activities and test reviews to provide additional instruction on key concepts.
- Students are individually assigned software modules based on results of diagnostic assessments.
- Workshops are facilitated by students who have previously excelled in the core course and are trained and supervised by core course faculty.
- Workshop activities are just-in-time—i.e., designed so that students use the concepts during the next core course class session, which in turn helps them see the value of the workshops and motivates them to do the workshop activities.

Four Models for Assessing Student Learning

What follows is a summary of the most effective and efficient ways to assess student learning.

Improved Learning

The basic assessment question to be answered is the degree to which improved learning has been achieved as a result of the course redesign. Answering this question requires comparisons between the student learning outcomes associated with a given course delivered in its traditional form and in its redesigned form.

I. Establish the method of obtaining data

A. Pilot Phase

This comparison can be accomplished in one of two ways:

1. Parallel Sections (Traditional and Redesign)

Run parallel sections of the course in traditional and redesigned formats and look at whether there are any differences in outcomes—a classic "quasi-experiment."

2. Baseline “Before” (Traditional) and “After” (Redesign)

Establish baseline information about student learning outcomes from an offering of the traditional format “before” the redesign begins and compare the outcomes achieved in a subsequent (“after") offering of the course in its redesigned format.

B. Full Implementation Phase

Since there will not be an opportunity to run parallel sections once the redesign reaches full implementation, use baseline data from a) an offering of the traditional format “before” the redesign began, or b) the parallel sections of the course offered in the traditional format during the pilot phase.

The key to validity in all cases is a) to use the same measures and procedures to collect data in both kinds of sections and, b) to ensure as fully as possible that any differences in the student populations taking each section are minimized (or at least documented so that they can be taken into account.)

II. Choose the measurement method

The degree to which students have actually mastered course content appropriately is, of course, the bottom line. Therefore, some kind of credible assessment of student learning is critical to the redesign project.

Four measures that may be used are described below.

A. Comparisons of Common Final Exams

Some projects use common final examinations to compare student learning outcomes across traditional and redesigned sections. This approach may include sub-scores or similar indicators of performance in particular content areas as well as simply an overall final score or grade. (Note: If a grade is used, there must be assurance that the basis on which it was awarded is the same under both conditions—e.g., not "curved" or otherwise adjusted.)

1. Internal Examinations (Designed by Faculty)

Parallel Sections Example: "During the pilot phase, students will be randomly assigned to either the traditional course or the redesigned course. Student learning will be assessed mostly through examination developed by departmental faculty. Four objectively scored exams will be developed and used commonly in both the traditional and redesigned sections of the course. The exams will assess both knowledge of content and critical thinking skills to determine how well students meet the six general learning objectives of the course. Students will take one site-based final exam as well. Student performance on each learning outcome measure will be compared to determine whether students in the redesigned course are performing differently than students in the traditional course."

Before and After Example: "The specifics of the assessment plan are sound, resting largely on direct comparisons of student exam performance on common instruments in traditional and re-designed sections Sociology faculty have developed a set of common, objective, questions that measure the understanding of key sociological concepts. This examination has been administered across all sections of the course for the past five years. Results obtained from the traditional offering of the course will be compared with those from the redesigned version."

2. External Examinations (Available from Outside Sources)

Parallel Sections Example: "The assessment plan involves random assignment of students to "experimental" (redesign) and "control" (traditional) groups operating in parallel during the pilot phase of implementation. Assessment will measure student success against established national (ACTFL) guidelines, including an Oral Proficiency Interview that has been widely validated and is also in use in K-12 settings. This will allow the university to compare results of the redesign to baseline literature about results of traditional pedagogy, to compare the added effect of use of multimedia to the same material delivered conventionally, and to gauge the effect of new remediation strategies on student performance."

Before and After Example: "The centerpiece of the assessment plan with respect to direct measures of student learning is its proposed use of the ACS Blended Exam in Chemistry in a before/after design—administered to students in both traditional and redesigned course environments. A well-accepted instrument in chemistry, the ACS Exam has the substantial advantage of allowing inter-institutional comparisons according to common standards."

B. Comparisons of Common Content Items Selected from Exams

If a common exam cannot be given—or is deemed to be inappropriate—an equally good approach is to embed some common questions or items in the examinations or assignments administered in the redesigned and traditional delivery formats. This design allows common baselines to be established, but still leaves room for individual faculty members to structure the balance of these finals in their own ways where appropriate. For multiple-choice examinations, a minimum of twenty such questions should be included. For other kinds of questions, at least one common essay, or two or three problems should be included.

Parallel Sections Example: "The primary technique to be used in assessing content is common-item testing for comparing learning outcomes in the redesigned and traditional formats. Traditional and redesigned sections will use many of the same exam questions. Direct comparisons on learning outcomes are to be obtained on the basis of a subset of 30 test items embedded in all final examinations."

Before and After Example: "The assessment plan must address the need to accommodate a total redesign in which running parallel sections is not contemplated. The plan calls for a "before/after" approach using 30 exam questions from the previously delivered traditionally-configured course and embedding them in exams in the redesigned course to provide some benchmarks for comparison."

C. Comparisons of Pre- and Post-tests

A third approach is to administer pre- and post-tests to assess student learning gains within the course in both the traditional and redesigned sections and to compare the results. By using this method, both post-test results and "value-added" can be compared across sections.

Parallel Sections Example: "The most important student outcome, substantive knowledge of American Government, will be measured in both redesigned and traditional courses. To assess learning and retention, students will take: a pre-test during the first week of the term and a post-test at the end of the term. The Political Science faculty, working with the evaluation team, will design and validate content-specific examinations that are common across traditional and redesigned courses. The instruments will cover a range of behaviors from recall of knowledge to higher-order thinking skills. The examinations will be content-validated through the curriculum design and course objectives."

Before and After Example: "Student learning in the redesigned environment will be measured against learning in the traditional course through standard pre- and post-tests. The university has been collecting data from students taking Introduction to Statistics, using pre- and post-tests to assess student learning gains within the course. Because the same tests are administered in all semesters, they can be used to compare students in the redesigned course with students who have taken the course for a number of years, forming a baseline about learning outcomes in the traditional course. Thus, the institution can compare the learning gains of students in the newly redesigned learning environment with the baseline measures already collected from students taking the current version of the course."

D. Comparisons of Student Work Using Common Rubrics

Naturally occurring samples of student work (e.g. papers, lab assignments, problems, etc.) can be collected and their outcomes compared—a valid and useful approach if the assignments producing the work to be examined really are quite similar. Faculty must have agreed in advance on *how* student performance is to be judged and on the *standards* for scoring or grading (a clear set of criteria or rubrics to grade assignments.) Faculty members should practice applying these criteria in advance of the actual scoring process to familiarize themselves with it and to align their standards. Ideally, some form of assessment of inter-rater agreement should be undertaken.

Parallel Sections Example: "Students complete four in-class impromptu writing assignments. A standard set of topics will be established for the traditional and redesigned sections. A standardized method of evaluating the impromptu essays has already been established and will be used in grading each assignment. The essays are graded by using a six-point scale. The reliability measure for this grading scale has been established at 0.92. Additionally, each paper is read by at least two readers. The grading rubric will be applied to the four standard writing assignment prompts administered in parallel in simultaneously offered redesigned and traditional course sections."

Before and After Example: "The assessment plan is quite sophisticated, involving both "before/after" comparisons of student mastery of statistics concepts in the traditional course and the redesigned course. The design itself involves direct comparisons of performance on common assignments and problem sets using detailed scoring guides (many of which were piloted and tested previously and are thus of proven utility). Because the department has already established and benchmarked learning outcomes for statistics concepts in considerable detail, and uses common exercises to operationalize these concepts, the basis of comparison is clear."

<u>Tips</u>

- Avoid creating "add-on" assessments to regular course assignments such as specially constructed pre and post-tests. These measures can raise significant problems of student motivation. It is easier to match and compare regular course assignments.

- If parallel sections are formed based on student choice, it would be a good idea to consider whether differences in the characteristics of students taking the course in the two formats might be responsible for differences in results. Final learning outcomes could be regressed on the following: status (full vs. part-time); high-school percentile rank; total SAT score; race; gender; whether or not the student was taught by a full-time or part-time faculty member; and whether or not the student was a beginning freshman.

- In addition to choosing one of the four required measures, the redesign team may want to conduct other comparisons between the traditional and redesigned formats such as:

    1. Performance in follow-on courses
    2. Attitude toward subject matter
    3. Deep vs. superficial learning
    4. Increases in the number of majors in the discipline
    5. Student interest in pursuing further coursework in the discipline

PILOT ASSESSMENT PLAN

Institution:

Course Title:

1. Which method of comparing learning outcomes do you intend to use? (Put an X next to all that apply)

	<---Parallel Sections
	# of traditional sections
	# of students in each section
	Total # of students
	# of redesign sections
	# of students in each section
	Total # of students
	<---Before and After
	<---Timeframe for baseline data (e.g. fall 2006 semester, AY 2006-7, five-year average 2001-2006)
	# of traditional sections
	# of students in each section
	Total # of students
	# of redesign sections
	# of students in each section
	Total # of students

2. Which method of obtaining data do you intend to use? (Put an X next to all that apply)

	A - Comparisons of common final exams (internal and external)
	B - Comparisons of common content items selected from exams
	C - Comparisons of pre- and post-tests
	D - Comparisons of student work using common rubrics

Describe briefly:

FULL IMPLEMENTATION ASSESSMENT PLAN							
Institution:							
Course Title:							
1. Which source of baseline information do you intend to use? (Put an X next to all that apply)							
		<---an offering "before" the redesign began					
		<---parallell sections during the pilot phase					
		<---Timeframe (e.g. fall 2006 semester, 2006-7, five-year average 2001-2006)				AY	
		# of traditional sections					
		# of students in each section					
		Total # of students					
		# of redesign sections					
		# of students in each section					
		Total # of students					
2. Which method of obtaining data do you intend to use? (Put an X next to all that apply)							
		A - Comparisons of common final exams (internal and external)					
		B - Comparisons of common content items selected from exams					
		C - Comparisons of pre- and post-tests					
		D - Comparisons of student work using common rubrics					
Describe briefly:							

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Cost Reduction Strategies

Previous NCAT redesign projects have used a variety of strategies to reduce instructional costs. Here is a summary of the strategies that have proven to be most effective.

Step 1. Identify the enrollment profile of the course

- Is the course enrollment stable?

If the course enrollment is relatively stable (and accommodating more students is not a goal), you must reduce the number of people involved in teaching the course and/or change the mix of personnel in order to produce cost savings.

- Do you want to accommodate enrollment growth?

If accommodating more students is a goal, you do not have to reduce the number of people involved in teaching the course in order to produce cost savings, although you can do this. You can reduce the cost-per-student by teaching more students with the same staffing.

Step 2. Choose the labor-savings tactic(s) that will allow you to implement the chosen strategy with no diminution in quality.

Traditional formats require instructors to carry out all of the development and delivery aspects of a course on their own. Course redesign involves substituting technology for much of that effort, often with the assistance of different kinds of personnel. Making the substitutions listed below allows each instructor to teach more students than before without increasing his or her workload.

- Substitute coordinated development and delivery of the whole course and shared instructional tasks for individual development and delivery of each individual course section.
- Substitute interactive tutorial software for face-to-face class meetings.
- Substitute automated grading of homework, quizzes, exams for hand grading.
- Substitute course management software for human monitoring of student performance and course administration.
- Substitute interaction with other personnel for one-to-one faculty/student interaction.

Completing the Course Planning Tool (CPT) will allow you to analyze which of these labor-savings tactics make the most sense for you to use in your planned redesign.

Step 3. Choose the appropriate cost reduction strategy.

There are three ways to re-structure the course that will reduce costs.

1. Each instructor carries more students. (The instructor may be a tenured full-time faculty member, a temporary instructor, a graduate teaching assistant or an adjunct faculty member.)

   This can be done by
   a. increasing section size, or
   b. increasing the number of sections that each instructor carries for the same workload credit.

2. Change the mix of personnel from more expensive to less expensive.
3. Do both simultaneously.

Each of these strategies can be used whether your enrollment is growing or stable. When enrollment is stable, cost reduction means that fewer resources are devoted to the course. When enrollment is growing, cost reduction means that more students can be served on the same resource base. In each case, the cost-per-student (total resources devoted to the course/total course enrollment) is reduced.

1. Each instructor carries more students.

(The instructor may be a tenured full-time faculty member, a temporary instructor, a graduate teaching assistant or an adjunct faculty member.)

a. Increase section size

Stable enrollment: If your enrollment is stable, this will allow you to reduce the number of sections offered and the number of people teaching the course.

Examples
Traditional: 800 students: 40 sections of 20 students each taught by 40 instructors. S/F ratio = 20:1
Redesign: 800 students: 20 sections of 40 students each taught by 20 instructors. S/F ratio = 40:1

Growing enrollment: If your enrollment is growing, this will allow you to serve more students with the same number of people teaching the course.

Examples
Traditional: 800 students: 40 sections of 20 students each taught by 40 instructors. S/F ratio = 20:1
Redesign: 1600 students: 40 sections of 40 students each taught by 40 instructors. S/F ratio = 40:1

b. Increase the number of sections that each instructor carries for the same workload credit.

Stable enrollment: If your enrollment is stable, this will allow you to offer the same number of sections and reduce the number of people teaching the course.

Examples
Traditional: 800 students: 40 sections of 20 students each; each instructor teaches one section for the same workload credit. S/F ratio = 20:1
Redesign: 800 students: 40 sections of 20 students; each instructor teaches two sections for the same workload credit. S/F ratio = 40:1

Growing enrollment: If your enrollment is growing, this will allow you to serve more students with the same number of people teaching the course.

Examples
Traditional: 800 students: 40 sections of 20 students each; each instructor teaches one section for the same workload credit. S/F ratio = 20:1
Redesign: 1600 students: 80 sections of 20 students; each instructor teaches two sections for the same workload credit. S/F ratio = 40:1

2. Change the mix of personnel from more expensive to less expensive.

Stable enrollment: If your enrollment is stable, this will allow you to offer the same number of sections and reduce the total cost of the people teaching the course since adjuncts, tutors and undergraduate tutors are paid less than full-time faculty, and tutors and undergraduate tutors are paid less than adjuncts.

Examples
Traditional: 800 students: 40 sections of 20 students each; 30 sections taught by full-time faculty; 10 sections taught by adjuncts.
Redesign: 800 students: 40 sections of 20 students; 10 sections taught by full-time faculty; 30 sections taught by adjuncts.

Growing enrollment: If your enrollment is growing, this will allow you to serve more students, offer more sections and reduce the cost-per-student since adjuncts, tutors and undergraduate tutors are paid less than full-time faculty, and tutors and undergraduate tutors are paid less than adjuncts.

Examples
Traditional: 800 students: 40 sections of 20 students each; 30 sections taught by full-time faculty; 10 sections taught by adjuncts.
Redesign: 1600 students: 80 sections of 20 students; 20 sections taught by full-time faculty; 60 sections taught by adjuncts.

3. Do both simultaneously.

Most redesigns employ both strategies simultaneously as the examples below illustrate.

Examples

Cleveland State Community College: In the traditional model, Cleveland State's developmental math program comprised 55 24-student sections in fall and spring, 45 of which were taught by full-time faculty (82%) and 10 by adjuncts (18%). Each course met three times per week. The total cost of the traditional course was $270,675. In the redesigned model, Cleveland State offered 77 18-student sections in fall and spring, all of which were taught by full-time faculty at a cost of $219,258. Each section had one

class meeting per week in a small computer lab and students were required to spend two additional hours in a larger lab staffed by faculty and tutors. The total cost savings was $51,418, a 19% reduction. The FTE teaching load per faculty member went from 21.2 to 26.0 with no increase in workload. Faculty used to teach five sections per semester. In the redesign, faculty members taught 10-11 sections, which met once per week, and worked 8–10 hours in the lab. Increased faculty productivity enabled the department to eliminate the use of adjunct instructors while increasing course offerings. Overloads were also reduced as a result of the redesign project.

Florida Gulf Coast University (FGCU): FGCU reduced the number of sections from 31 to 2 and increased the number of students served in the first year of its fine arts redesign from 800 to 950. Full-time faculty taught 20% of the traditional course, and adjuncts taught 80%. FGCU eliminated adjuncts completely; the course is now taught 100% by full-time faculty supported by a new position called the preceptor. Preceptors, most of whom have a B.A. in English, are responsible for interacting with students via email, monitoring student progress, leading Web Board discussions and grading critical analysis essays. Each preceptor works with 10 peer learning teams or a total of 60 students. Replacing adjuncts independently teaching small sections ($2,200 per 30-student section) with preceptors assigned a small set of specific responsibilities ($1,800 per 60-student cohort) in the context of a consistent, faculty-designed course structure will allow FCGU to accommodate ongoing enrollment growth while steadily reducing its cost-per-student.

Louisiana State University (LSU): The redesign of College Algebra at LSU produced cost savings by serving the same number of students with one-half of the personnel used in the traditional model. Section size stayed at 40-44 students, but the number of class meetings each week was reduced from three to one. The redesigned format allowed one instructor to teach twice as many students as in the traditional format without increasing class size and without increasing workload. In the traditional format, each instructor taught one three-day-a-week section with 44 students. In the redesigned format, that same instructor taught two sections of 44 students and spent four hours tutoring in the lab. This could be accomplished because the class only met once a week and because no hand-grading was required. While the cost of adding tutors in the learning center as well as increased time for coordination and systems administration reduced the net savings, the redesign reduced the cost-per-student from $121 to $78, a 36% savings

Tallahassee Community College (TCC): In its redesign of English Composition, TCC reduced the number of full-time faculty involved in teaching the course from 32 to 8 and substituted less expensive adjunct faculty without sacrificing quality and consistency. In the traditional course, full-time faculty taught 70% of the course, and adjuncts taught 30%. In the redesigned course, full-time faculty taught 33% of the course, and adjuncts teach 67%. Further savings were realized by reducing the amount of time and resources that the Writing Center staff had traditionally spent in working with students on basic skills. Mid-stage drafts were outsourced to SMARTHINKING, an online tutorial service. Overall, the cost-per-student was reduced from $252 to $145, a savings of 43%. Full-time faculty were freed to teach second-level courses where finding adjuncts was much more difficult.

University at Buffalo (UB) *and* *University of Colorado-Boulder (UC):* Both universities substituted undergraduate learning assistants (ULAs) for graduate teaching assistants (GTAs). In UB's computer literacy redesign, the number of assistants available to help

students was doubled. The hourly cost of a GTA was $39 compared to $8 for an ULA. ULAs turned out to be better at assisting their peers than GTAs because of the ULAs' better understanding of students' common misconceptions and their superior communication skills. While the employment of ULAs in UC's astronomy redesign was driven by the need to reduce costs ($23 vs. $9 per hour), the ULAs were more effective than most GTAs. ULAs were highly motivated to make the course a success. Because students regarded the ULAs as peers, they were more open about their learning difficulties with them than with GTAs.

University of Idaho: The University of Idaho redesigned three pre-calculus courses enrolling a total of 2,428 students by moving them to the Polya Learning Center modeled after the Virginia Tech Math Emporium. In the traditional format, the courses met three times per week in sections of ~50 students taught by lecturers and graduate students using the didactic lecture format. Out-of-class assistance was provided by a tutoring center. The university moved all structured learning activity to the Polya center where students received just-in-time assistance from instructors and undergraduate assistants. Instructors also met students in a once-a-week focus group that focused on student problems and built community among students and instructors. Faculty preparation hours were reduced by 27% while interaction time with students more than doubled. One faculty member coordinated the course and a Lab Manager supervised personnel in the lab. The redesign reduced the total cost of offering all three courses from approximately $338,000 to $235,000, a reduction of 31%. Savings generated from this redesign remained with the department to be reinvested in redesigning additional math courses to be taught in the Polya Center.

The University of Southern Mississippi (USM): USM reduced the number of sections from 30 to 2 and increased the number of students in each section from 65 to 1000. These changes enabled the university to reduce the number of faculty teaching the course from 16 (8 full-time faculty and 8 adjuncts) to the equivalent of 2 full-time faculty and 4 GTAs. Prior to the redesign, 50% of the course was taught by full-time faculty, and 50% was taught by adjuncts. Southern Mississippi eliminated adjuncts completely. The course is now taught 100% by full-time faculty supported by GTAs for writing assignment grading. By making these changes, six full-time faculty were freed to teach other courses, and the funds previously used to hire adjuncts were made available for a variety of academic enhancements in the department. The University of Southern Mississippi reduced the cost-per-student by 56%.

Further Opportunities for Cost Savings

After several terms of fully implementing your redesign strategy, you may achieve further savings through such things as improved retention (increased course completion rates), the impact of modularization and/or reduced space requirements. There are, however, a number of variables that may influence whether or not you are able to realize those additional savings such as the number of students who accelerate vs. the number who move at a slower pace, scheduling complexities, and so on. Because it is difficult to predict how these various elements will play out until you have some experience with the redesign over time, your plan for cost reduction must include one of the strategies listed above which will result in immediate savings during the first term of full implementation.

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Homework for Workshop II

In preparation for the workshop, we would like your team to complete three tasks that will give you a taste of the redesign process and make the workshop a more productive and meaningful experience.

Required Reading

- Round I Redesigns: Lessons Learned
- Round II Redesigns: Lessons Learned
- Round III Redesigns: Lessons Learned

Analyses of the results of the three rounds of course redesign projects, with a focus on the most important quality improvement and cost reduction techniques used in the redesigns, the implementation issues they encountered, and the projected sustainability of the course redesigns.

- Increasing Success for Underserved Students: Redesigning Introductory Courses (July 2005)

A monograph examining the impact of the redesign techniques developed by the Program in Course Redesign on the success of adult students, students of color, and low-income students.

Partial Draft of the Course Planning Tool (CPT)

The Course Planning Tool (CPT) has proven to be an important part of the course redesign process because it facilitates a team analysis of all of the instructional tasks in both the traditional and redesigned format of the course as well as its associated costs. For the workshop, we would like you to complete a draft of sheets 1 and 2 of the CPT (the summary of personnel costs and the analysis of the course in its traditional format) as well as the top half of page 4 (Annual Cost of the Traditional Course) for the course(s) you intend to redesign. This exercise will help you understand the various components of the course, consider those that can be changed and those that cannot, and analyze the sources of the costs of the course.

A downloadable version of the CPT, instructions for how to complete it and completed examples can be found on the Center's web site at http://www.thencat.org/PlanRes/CPTdesc.htm.

If you have difficulty downloading the tool, please contact Pat Bartscherer at patb@theNCAT.org.

If you have questions about completing the tool, please contact Carolyn Jarmon at cjarmon@theNCAT.org.

An electronic version of the CPT should be sent to Pat Bartscherer at patb@theNCAT.org by April 4, 2011.

Workshop Presentation

We would like each of your team members to be prepared to present a five-minute summary of your choice of redesign model and how you intend to implement the "Five Principles of Successful Course Redesign" within that model. For one part of the workshop, we intend to divide the large group into groups of 8, breaking up institutional teams, so that you can share your ideas about models and principles and receive feedback on your ideas.

References

- Six Models for Course Redesign
- Five Principles of Successful Course Redesign

We encourage you to consider all six redesign models as you think about your own plans rather than assuming that you should follow the model used by the core institutions in your particular discipline with the exception of mathematics (see http://www.thencat.org/RedMathematics.htm if you are planning a mathematics redesign.)

Course Planning Tool

Institution:				
Course:				
Instructional Costs per Hour				
Faculty (Tenure-Track)			**Faculty (Non-Tenure Track)**	
Salary and benefits			Salary and benefits	
% devoted to instruction			% devoted to instruction	
% devoted to one section of this course			% devoted to one section of this course	
Cost of one section of this course			Cost of one section of this course	$0
In-class contact hours for course			In-class contact hours for course	
Out-of-class hours			Out-of-class hours	
Total hours	0		Total hours	0
Cost per hour			Cost per hour	
TAs/GAs			**Adjunct/Part-Time Faculty**	
Salary and benefits			Salary and benefits	
% devoted to instruction				
% devoted to one section of this course			In-class contact hours for course	
Cost of one section of this course			Out-of-class hours	
			Total hours	0
In-class contact hours for course			Cost per hour	
Out-of-class hours				
Total hours	0			
Cost per hour				
Professional/Support Staff	**$ per hour**		**Undergraduate Assistants**	**$ per hour**

Institution:		NOTE If you insert or delete columns, you must adjust the formulas that calculate							
Course:		totals at the bottom of the worksheet.							
Traditional Course		Tenure-Track		Non-Tenure-				Adjunct/	
		Faculty		Track Faculty		TAs/GAs		PT Faculty	
		Hourly rate =		Hourly rate =		Hourly rate =		Hourly rate =	
		# of Hours	Total Cost	# of Hours	Total Cost	# of Hou	Total Cost	# of Hours	Total Cost
I. Course Preparation									
A. Curriculum Development			$0		$0		$0		$0
B. Materials Acquisition			$0		$0		$0		$0
C. Materials Development									
1. Lectures/presentations			$0		$0		$0		$0
2. Learning materials/software			$0		$0		$0		$0
3. Diagnostic assessments			$0		$0		$0		$0
4. Assignments			$0		$0		$0		$0
5. Tests/evaluations			$0		$0		$0		$0
Sub-Total		0	$0	0	$0	0	$0	0	$0
D. Faculty/TA Development/Training									
1. Orientation			$0		$0		$0		$0
2. Staff meetings			$0		$0		$0		$0
3. Attend lectures			$0		$0		$0		$0
Sub-Total		0	$0	0	$0	0	$0	0	$0
Total Preparation		0	0	0	0	0	0	0	0
II. Course Delivery									
A. Instruction									
1. Diagnose skill/knowledge			$0		$0		$0		$0
2. Presentation			$0		$0		$0		$0
3. Interaction			$0		$0		$0		$0
4. Progress monitoring			$0		$0		$0		$0
Sub-Total		0	$0	0	$0	0	$0	0	$0
B. Evaluation									
1. Test proctoring			$0		$0		$0		$0
2. Tests/evaluation			$0		$0		$0		$0
Sub-Total		0	$0	0	$0	0	$0	0	$0
Total Delivery		0	$0	0	$0	0	$0	0	$0
TOTAL		0	$0	0	$0	0	$0	0	$0

Institution:		NOTE If you insert or delete columns, you must adjust the formulas that calculate					
Course:		totals at the bottom of the worksheet.					
Redesigned Course		Tenure-Track	Non-Tenure-	TAs/GAs	Adjunct/		
		Faculty	Track Faculty		PT Faculty		
		# of Hours	# of Hours	# of Hours	# of Hours		
I. Course Preparation							
A. Curriculum Development							
B. Materials Acquisition							
C. Materials Development							
1. Lectures/presentations							
2. Learning materials/software							
3. Diagnostic assessments							
4. Assignments							
5. Tests/evaluations							
Sub-Total		0	0	0	0		
D. Faculty/TA Development/Training							
1. Orientation							
2. Staff meetings							
3. Attend lectures							
Sub-Total		0	0	0	0		
Total Preparation		0	0	0	0		
II. Course Delivery							
A. Instruction							
1. Diagnose skill/knowledge							
2. Presentation							
3. Interaction							
4. Progress monitoring							
Sub-Total		0	0	0	0		
B. Evaluation							
1. Test proctoring							
2. Tests/evaluation							
Sub-Total		0	0	0	0		
Total Delivery		0	0	0	0		
TOTAL		0					

Institution:	**NOTE If you insert or delete columns, you must adjust the formulas that calculate totals.**						
Course:							
	Tenure-Track	**Non-Tenure-**		**Adjunct/**			
	Faculty	**Track Faculty**	**TAs/GAs**	**PT Faculty**			
	Sections	**Sections**	**Sections**	**Sections**			
ANNUAL COST OF THE TRADITIONAL COURSE							
# of sections taught in fall and spring							
Cost of one section							
Cost of instruction by type					**$0**	Total cost of direct instruction	
						Total cost of course coordination	
GRAND TOTAL	$0					Total cost of other personnel	
Total # of students							
Cost per student							
ANNUAL COST OF THE REDESIGNED COURSE							
# of sections taught in fall and spring							
Cost of one section							
Cost of instruction by type					**$0**	Total cost of direct instruction	
						Total cost of course coordination	
GRAND TOTAL	$0					Total cost of other personnel	
Total # of students							
Cost per student							

The National Center for Academic Transformation

Corporate Contact Information

The National Center for Academic Transformation works closely with a number of higher education companies to ensure that educational institutions participating in cutting-edge course redesigns have knowledge of the best technology and best content to produce the best outcomes.

As project teams consider which tools to use, questions specific to a course redesign project may arise that cannot be answered by the sales representative that is assigned to your institution. If that situation arises, please refer to the contact information below for a person at each of the companies we currently work with that NCAT knows is familiar with the NCAT course redesign program and can help. In addition, teams might be contacted by these companies proactively but are under no obligation to work with them. Please note that NCAT does not endorse any particular company, software or tool but rather all tools that are proven to be effective in improving learning outcomes and reducing instructional costs.

Company	Contact(s)
Carnegie Learning 412-690-2442	Michelle Muller Marketing Specialist mmuller@carnegielearning.com
Cengage Learning 513-229-1502	Douglas Ingersoll Marketing Director, Digital & Custom Solutions douglas.ingersoll@cengage.com
Educational Testing Service 305-255-8347	Jon Alexiou Director, Community College Initiatives JAlexiou@ets.org
Hawkes Learning Systems 843-571-2825	Brittany Walker Marketing Coordinator bwalker@hawkeslearning.com
iLearn, Inc. 770-218-0972 x101	Robert L. Collins CEO bob@ilearn.com
Pearson Education 617-848-7420	Karen Mullane VP/Director Marketing, Faculty Programs MyMathLab/MathXLl/MyEconLab/Mastering X karen.mullane@pearson.com
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The National Center for Academic Transformation

ABOUT THE NATIONAL CENTER FOR ACADEMIC TRANSFORMATION

Who We Are
The National Center for Academic Transformation (NCAT) is an independent, not-for-profit organization that provides leadership in using information technology to redesign learning environments to produce better learning outcomes for students at a reduced cost to the institution. The NCAT staff has extensive experience in higher education as faculty members, administrators and researchers in both traditional and non-traditional higher education environments.

What We Do
NCAT works through a four-stage iterative process to advance the use of information technology in improving student learning and reducing instructional costs:

1. Proof of Concept

NCAT creates and conducts innovative programs that use technology to improve learning and reduce costs in partnership with colleges and universities. The outcome of each effort is a proof of concept. For example:

- Program in Course Redesign (PCR), funded by the Pew Charitable Trusts, 1999 – 2003
- Roadmap to Redesign (R2R), funded by FIPSE, 2003 – 2006
- Colleagues Committed to Redesign (C2R), funded by FIPSE, 2006 – 2009

2. Analysis

NCAT analyzes the results of these programs to identify and document specific techniques and practices that lead to success, to develop models for future practice and to learn what next steps are needed to scale the proof of concept. For example:

- PCR Outcomes Analyses
- Increasing Success for Underserved Students, a Lumina-funded study
- R2R Outcomes Analyses

3. Communication

NCAT communicates these lessons learned by writing and speaking for professional and general audiences about successful patterns and practices that lead to improved student learning and reduced instructional costs. For example:

- *The Learning MarketSpace*, a quarterly electronic newsletter
- Articles and Monographs, available on the NCAT web site
- The Redesign Alliance, a national membership organization

4. Scale

NCAT works with institutions, systems, districts and states to scale the proof of concept to impact greater numbers of students, faculty members and institutions and achieve significant educational change. For example:

- Arizona Board of Regents (2006 – 2009)
- Tennessee Board of Regents (2006 – 2009)
- University System of Maryland (2006 – 2009)

NCAT then uses the feedback and experience gained in each stage of the process to create and conduct additional programs in partnership with colleges and universities that demonstrate new ways to achieve improved student learning and reduced instructional cost.

For more information about NCAT and its programs, see www.theNCAT.org.

Bios

Dr. Carol A. Twigg is President and CEO of the National Center for Academic Transformation and an internationally recognized expert in using information technology to transform teaching and learning in higher education. Winner of the McGraw Prize in Education, she is former Vice President of Educom (now EDUCAUSE), where she advanced the need for new models of student-centered, online teaching and learning, now commonly accepted in higher education. She also initiated the IMS Global Learning Consortium, which is establishing interoperable technical standards for online education and training. Before joining Educom, she was Associate Vice Chancellor for Learning Technologies for the State University of New York and held a number of senior academic administrative positions at Empire State College.

Carol holds a Ph.D. in English Literature from the State University of New York at Buffalo and Bachelor of Arts degree from the College of William and Mary.

Carolyn Jarmon is Vice President of the National Center for Academic Transformation. From 1996–1998, she served as the Educom Visiting Fellow, working with member institutions, including California State University System and the University of Wisconsin-Madison, redesigning learning environments to make them more cost-effective. Carolyn has given numerous presentations and been published widely on the topics of effective delivery of student services and distance education and she consults regularly with institutions and corporations about learning in distributed environments. Prior to joining NCAT, Carolyn held several academic and administrative positions at SUNY Empire State College. Carolyn has also taught and held administrative positions at several traditional institutions, both public and private.

Carolyn has a Ph.D. from Cornell University, a Master's in Business Administration from East Tennessee State University, and a Bachelor of Science degree from the University of Delaware.

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Course Redesign Planning Resources

http://www.thencat.org/R2R/R2R_Planning_Resources.htm

NCAT has developed a number of resources to support the redesign process based on the experience gained from more than 120 large-scale course redesigns. From those 120 course redesign experiences, NCAT has learned a lot about what works well and what does not. NCAT has continued to refine its redesign methodology so that new institutions working with NCAT will benefit from the experience of institutions that have previously implemented large-scale course redesigns.

Recommended Reading

- Here's a list to get you started.

Planning Resources

- Readiness Criteria
  A set of criteria to identify those institutions and courses that are good candidates for large-scale redesign.
- Six Models for Course Redesign
  A summary of the characteristics of the six course redesign models that emerged from the Program in Course Redesign.
- Five Principles of Successful Course Redesign
  A summary of the redesign techniques that are essential to improving student learning while reducing instructional costs.
- Four Models for Assessing Student Learning
  A summary of the most effective and efficient ways to assess student learning.
- Cost Reduction Strategies
  A summary of the most effective strategies that can reduce instructional costs.
- Five Critical Implementation Issues
  A summary of the most common implementation issues encountered by the projects in the Program in Course Redesign

Forms and Worksheets

- Assessment Forms
  Forms to support comparing student learning and course completion in the traditional format to the redesigned format.
- Course Planning Tool
  A planning tool to compare the elements and costs of a traditional course with its redesign implementation.
- Planning Checklist
  A checklist to review the final course redesign plan.