

## Five Critical Implementation Issues

From the experience of the 30 projects involved in the [Program in Course Redesign](#), we have identified the five most important implementation issues that they encountered. Some of these issues were faced by only a few institutions, but when the problem occurred, it created a major obstacle for the redesign implementation. Others were faced by a number of institutions. Some institutions did not encounter these issues because they foresaw them and dealt with them in advance. Others did not anticipate the particular problem and had to deal with it in mid-project. Some worked on solving the problems constructively and ended up with successful redesigns; others “backslid” and abandoned key aspects of their redesign plan. We refer to these implementation issues as “critical” because planning how you will deal with them can be the key to achieving success in course redesign.

We encourage you to pay special attention to how you will:

1. Prepare students (and their parents) and the campus for changes in the course.
2. Train instructors, graduate teaching assistants (GTAs), and undergraduate peer tutors.
3. Ensure an adequate technological infrastructure to support the redesign as planned.
4. Achieve initial and ongoing faculty consensus about the redesign.
5. Avoid backsliding by building ongoing institutional commitment to the redesign.

### **1. Prepare students (and their parents) and the campus for changes in the course.**

Making the change from traditional classroom instruction to new ways of learning involves far more than learning to use a computer. Many students are set in their ways after a lifetime (albeit brief) of passive instruction. They need preparation in making the transition to more active learning environments. Giving careful thought to how students, their parents and the rest of the campus community will learn about the redesigned course will help you avoid a number of problems that can arise.

*[University of Southern Mississippi](#) Example:* “Initial stories in the campus and local press emphasized the technology of the course, especially its online dimensions, and pitched making life easier as students could ‘come to class without leaving home.’ The stories frightened many students, angered faculty, and confused administrators as parents phoned them to ask for details about an ‘instructorless’ course that was still in the design stage. In hindsight, a better approach would have been to emphasize how traditional the course could be for students who chose that path: students could still attend live presentations and participate in discussions; WebCT was already being used in hundreds of other campus courses; and there would be more in-person help and office hours available than ever before with a nine-person team (four faculty instructors, four graduate assistant graders, and a faculty coordinator) collectively offering the redesigned course rather than the sole instructor of a ‘normal’ course. It would have been better to insist that the press stress educational ends rather than technological means from the outset. Although improved reading and writing skills will always seem less newsworthy than stories about streaming video, it’s

nevertheless crucial to keep a clear focus on why the technology has been called into play in the first place.”

[University of Dayton](#) *Example:* “Student surveys revealed that a major contributor to students’ pre-course attitudes toward distance learning was the belief that the course would be impersonal and would lack opportunities for student-student and faculty-student interaction, even though they had never participated in a distance-learning course. The course needed to be promoted among students, faculty, and staff. A Web site that included a demonstration version of the course was an effective promotional tool. The university needed to develop and communicate to parents and students a coherent and compelling description of its e-learning initiatives that addressed common misconceptions and concerns (e.g., that the university is turning into a ‘distance learning’ campus). This requirement will change as everyone on campus becomes more familiar with distance learning.”

[University of Alabama](#) *Example:* “The radical change in instructional style associated with the course redesign produced some unique issues not typically associated with the traditional course structure, what the team dubbed the ‘No Teacher Syndrome.’ During the first year of implementation, students were very concerned about the lack of a formal teacher for their course even though they had one-on-one instructional support available at all times. In an effort to develop a personal relationship between students and instructors, weekly 30-minute ‘class’ sessions were scheduled, an automated e-mail system was developed to allow instructors to contact their students on a weekly basis, and the time instructors spent in the lab was fixed and publicized to allow students to come to the lab at specific times and deal with the same instructional staff.”

## **2. Train instructors, graduate teaching assistants (GTAs), and undergraduate peer tutors.**

Several projects experienced problems because they underestimated the degree of instructor, GTA, and undergraduate tutor training—both initial and ongoing—that was required in order to implement their redesigns successfully. Regardless of the redesign model chosen, the new format will inevitably require very different kinds of interactions with students than those of the traditional teaching format. Developing a formal plan for initial and ongoing training of all personnel—rather than assuming they will pick up the new methods on their own—will go a long way to ensuring a successful redesign.

[University of Tennessee-Knoxville](#) *Example:* “Initially the team overestimated the level of GTA preparedness and underestimated amount of training needed. Many of the GTAs had no experience in an online environment and were not prepared to help the students when they asked questions or encountered problems. Although training was held prior to the start of the pilot term, the team discovered that there was a need for ongoing training and stronger continuing GTA support than was initially planned. As the course numbers scaled up toward full implementation, the Instructional Technology Center increased the amount of GTA/instructor training on the course management system and exposure to the course structure to compensate for those with limited technology skills and/or experience. Because many of the GTAs were Master's candidates with minimal

or no teaching experience, their readiness to engage in a newly designed learning environment was also low.”

[University of Alabama](#) *Example:* “Training instructors, graduate teaching assistants, and undergraduate tutors to ‘teach’ in the lab has been a major challenge. The one-on-one assistance the computer-based format requires was very different from the teaching format the instructors had used and/or experienced in the past. The university has expanded training for instructors each semester to better equip them to provide assistance to students in the Math Technology Learning Center.”

[Drexel University](#) *Example:* “The desire to go back to old ways of doing things had to be overcome by both faculty and students. Once this occurred, many embraced the new system as providing a better learning experience. As new faculty, teaching assistants, and students were brought into the course over time, it was important to help them go through the same steps of accepting a different learning model and to point out ways of creating the type of connections attributed to the traditional lecture format. Laboratory assistants needed to be coached in how to facilitate and engage students in problem-solving rather than in resorting to lecturing or providing answers to students. Thus a formal training system with follow-up monitoring was needed for new faculty, teaching assistants, and laboratory assistants so they could fully adapt to the course redesign.”

### **3. Ensure an adequate technological infrastructure to support the redesign as planned.**

Technological problems encountered by the projects were of two kinds. The first kind of problem had to do with providing enough space in a timely manner to support the redesign model. Securing an upfront commitment from the institution regarding necessary space (or choosing a model that is not as space-dependent) will ensure that the project avoids implementation delays. The second kind of problem had to do with scaling issues. Many campuses have only offered relatively small online courses. Offering a course with heavy online components to hundreds—or thousands—of students requires a serious consideration of the technological infrastructure required to support it.

#### Space Issues

[University of Iowa](#) *Example:* “Full implementation was delayed by a lack of available laboratory space. At the time of the proposal, the university made a commitment to transferring lab space from botany to chemistry. A delay in construction and botany’s move meant that those facilities could not be used. An organic chemistry lab was finally transferred to support the redesign course.”

[Iowa State University](#) *Example:* “At the time the project began, the College of Liberal Arts and Sciences was planning to create a centralized computer lab. These plans did not succeed as scheduled, so the course was not fully implemented on the planned scale. This problem has now been resolved. About one-third of the course was redesigned in fall 2003, and the full course will be redesigned in spring 2004 and beyond.”

[University of Idaho](#) Example: “Finding sufficient space in an easily accessible and convenient location for the Polya Center required rehabbing space and relocating some offices. Now housing 71 computers in pods of four that are designed for as many as three students to work together at a single monitor, the Polya Center provides a learning environment for over 2400 students annually. To accommodate this large number of students, the Polya team has spread the load of student use more evenly by spreading assignment deadline dates across each day of the week. Thus 20% of students have deadline dates for assignments, tests and quizzes on Monday, 20% on Tuesday, and so on. The space is used more consistently, rather than just before a test or assignment is due, allowing more students to be accommodated in a smaller lab and reducing the lab downtime.”

### Scaling Issues

[University of New Mexico](#) Example: “The keystone for the success of the redesigned course was the randomly generated mastery quiz. Students would take a quiz many times in order to achieve a perfect score. Often they would continue taking quizzes even after having attained a perfect score. The ability to offer literally thousands of quiz items per student per week and to provide immediate feedback on performance could not have been achieved without the availability of online quizzing. Psychology, however, was the only course placing this degree of demand on the university’s WebCT server. There are now concerns that the server may not be able to continue to meet present demands, let alone future demands if other courses were to implement the multiple quiz design.”

[Portland State University](#) Example: “The technology created a considerable obstacle for a significant minority of students. Surprisingly, it was not the computer illiterate who encountered the most difficulty, but the students who insisted on performing all online activities from their home computers, where we could not provide technical assistance. Although all students were strongly encouraged to use university computer labs, about 90% did their activities from home, with about 10% of them experiencing chronic frustration. Both the Spanish program and the university continue to develop new WebCT training materials for student and instructor training.”

[University of Tennessee-Knoxville](#) Example: “Technological problems constituted the most important implementation issue experienced by most students at each phase of implementation and one that continues to be a challenge. The first four to five weeks in the pilot term were extremely problematic due to server problems. Students were frustrated and anxious, and instructors complained about the amount of time they had to spend resetting activities, responding to student email questions and complaints, and discussing technology-related problems in class. These frustrations were magnified as a result of increased class sizes. The technological problems were rooted in a glitch in the server. After the problems were resolved, there was a substantial reduction in student complaints. In a subsequent term, the course management system and delivery servers were upgraded to the more robust enterprise version of Blackboard. After these changes, there were only minor problems and the

feedback from both instructors and students was quite positive. In collaboration with the course coordinator, the technical and instructional support staff have worked diligently to rectify technical problems and increase instructor support.”

#### **4. Achieve initial and ongoing faculty consensus about the redesign.**

The biggest implementation issue for several of the projects was achieving consensus about a variety of issues among all faculty teaching the course. Since course development is usually done by a single faculty member working on a single course, the redesign of an entire course by multiple faculty can present a number of challenges such as gaining agreement on core course outcomes, instructional formats, topic sequences and a common Web site. Since instructors are often not used to talking about such issues, they need time to work through them. As several projects have commented, however, this can be a "good" problem to have. Collective decision-making and departmental buy-in are key factors that lead to successful redesigns.

[Tallahassee Community College](#) *Example:* “While the English faculty agreed to the redesign initially, once it was accomplished there was some opposition from several faculty members. In retrospect, the team needed to do a better job of communication and inclusion and actively involve the other 16 full-time faculty in improving redesign components and course evolution. This has been largely overcome and is not an issue with adjunct faculty.”

[Riverside Community College](#) *Example:* “The large number of faculty engaged in the redesign (24 spread among three campuses) led to a very complex redesign organization. Various committees created a common syllabus, common tests and finals that ensure that course outlines of record are being followed, a common grading metric that ensures that academic standards are upheld, and lab worksheets. Accomplishing these tasks required significant time and reaching a consensus on topics required patience and a lot of give-and-take. The discussion that resulted among faculty at all three campuses regarding student performance after the assessment of the redesign was also an unexpected, positive outcome.”

[Fairfield University](#) *Example:* “Since some traditional lectures were replaced by computer activities each semester, less time was available to cover the necessary material in the traditional lecture format. Thus, some lecture material that has become obsolete in today's science was eliminated, as were certain laboratory exercises that are simply procedural rather than inquiry-based. Instead, the team relied on particular software activities as assignments outside of class to emphasize the detail in biological concepts. The team had strong backing from most of the department, including freedom and encouragement to redesign the course syllabus as appropriate. The team has, however, been constantly faced with the challenge of obtaining faculty buy-in from the entire department. Thus far, they have been able to convince the majority that the changes will enhance learning without sacrificing content. The team has concluded that being effective change agents does not require complete buy-in if there is core support.”

## **5. Avoid backsliding by building ongoing institutional commitment to the redesign.**

You will undoubtedly notice that we emphasize institutional commitment to course redesign, and that includes building and sustaining that commitment throughout the life of the project. In the course of implementing a redesign, things happen. Lead faculty members leave or retire; departments get reorganized; presidents and provosts get new jobs. Faculty members on their own can show (and have shown) spectacular success in creating highly effective new learning environments, but in order for these successes to be sustained or for them to have a real impact on the institution as a whole, both departmental and institutional administrative leadership needs to play an active and continuing role.

You will inevitably encounter problems in implementing your redesign as you make a transition to a new form of instruction. Without a full commitment to preserving the key elements of the redesign while addressing the problems you encounter, the institution may simply abandon the redesign, thus forgoing either the learning gains or the cost savings benefits or both.

[University of Dayton](#) *Example:* “Our greatest challenge involved institutional support. Some administrators viewed this redesign project as a grand experiment or test case. The project has exposed a number of issues that need to be addressed, regardless of the success of our redesign. Our intellectual property policy needs to be revised to cover the development of online courses. The university needs to develop and communicate to parents and students a coherent and compelling description of our e-learning initiatives that addresses common misconceptions and concerns (e.g., that the university is becoming a “distance learning” campus). Far from being an insulated and isolated project, this redesign was simply the first of many such efforts. The more that the university can do now to learn from and address the larger support and public relations issues raised by this project, the easier it will be for future redesign teams.”

[Drexel University](#) *Example:* “In the middle of the project, the department of mathematics and computer science was split into independent departments in different colleges. The importance of having strong support from departmental (and university) leadership became increasingly clear after the department was split. Team members ended up in both departments, which created conflicting priorities that affected the pace of redesign. Unlike the joint department head, the new computer science department head was not a member of the redesign team, which resulted in a change in project scope because of a decision about how the target courses would be used. The fragility of creating and sustaining major pedagogic change under changes in leadership, which may bring changed priorities, was evident. Existing redesign features at the time of the split have been sustained and more fully developed, but aspects of the redesign that were not yet in place have been problematic to initiate due to changing interests and changing personnel. The project team is still working to achieve all of the redesign goals; however, the pace of implementation has been slowed.”

Riverside Community College Example: “The three RCC campuses successfully implemented the full redesign with all 3600 students, demonstrating increased student learning gains and decreased costs. Nevertheless, some faculty preferred the old model. In response to that faculty preference, a number of changes occurred on the three campuses. In fall 2002, RCC began offering a choice of either the redesigned or traditional lecture format at two of the campuses. Altogether 11 redesigned sections (enrolling 805 students) and 10 traditional sections (enrolling 500 students) were offered. The third campus has developed a model that uses the redesign model but also incorporates pencil and paper homework requirements. Topics and term schedules are still coordinated between two of the campuses because some students use labs on both campuses; however, tests are developed independently. Although the workshops on math study skills and time management were successful, they are no longer part of the redesigned course. These techniques have been combined into a credit course not applicable to a degree, which is offered occasionally.”