HOW TO REDESIGN A COLLEGE COURSE USING NCAT'S METHODOLOGY

X. How to Deal with Technological Issues

Integrating software and other technologies into a course redesign involves a lot of details and a lot of decisions. The following questions are frequently asked by teams working on new redesigns; the answers have been collected from those who have successfully implemented and sustained course redesigns.

Q: How do we choose the right instructional software package?

A: Some teams initially believe they will choose the software that accompanies the textbook they're currently using. Although that's certainly a possibility, it is useful for teams to consider the range of software options now on the market. Prior to making a software selection, a team should invite various vendors to demonstrate products and discuss particular institutional needs in order to determine how well the software could meet those needs.

The following list was developed by Phoebe Rouse at Louisiana State University. It provides a structure for teams to use as they consider which software package would work best with their students at their institutions.

Must Haves (without these, nothing else matters!)

- *Reliability.* Students and faculty need to know that the software will operate consistently—and without major or frequent downtimes.
- *High-quality content.* Faculty must feel confident that the content included is comprehensive, current, and well explained.
- *User-friendliness.* The software must be easy to use. Explanations to faculty for setting up the software with the appropriate learning resources, homework, and assessments should be clear. Software should be easy for students to use so that they can focus on learning the course content, not learning the software.

Other Features to Consider

- Ease of installation
- Cost to student
- Cost to institution
- Quality and accessibility of technical support
- Vendor willingness to provide training
- Browser restrictions
- Platform restrictions
- Capability for faculty to communicate with students
- Algorithmic exercises available
- Tutorial features
- Textbook included
- Videos
- Partial credit for multi-part questions

- Pooling for tests
- Sophistication of testing mechanism
- Coordinator/master course capability
- Grade book features
- Ease of ability to export grades
- Feedback after submission
- Ability to print student work
- Multiple attempts allowed on assignments
- Settings for individual students
- Software compatibility with Americans with Disabilities Act
- IP address restriction capability

Q: What about using free (open-source) software?

A: Some teams have considered using free software or resources available in repositories at the state or national level, but most of the successful course redesigns have based their redesigns around commercial software or well-established websites. Free resources should be evaluated using the earlier list. A key consideration is the decision about who will maintain and update the free resources over time. Companies are committed to doing so; free resources are often produced as one-offs as part of a particular project or grant program.

Q: What should we do if students cannot purchase software access codes at the beginning of the term for financial aid reasons?

A: Some of the commercial software providers have an option that gives students temporary access codes for several weeks while students wait for their financial aid. Students who buy the access code retain the work done, as if the students had bought the code at the beginning of the term. If students do not purchase the access code by the end of the grace period, the students' work cannot be accessed. When interviewing software companies, you should ask whether they provide such a grace period for students.

Q: Do students also need a textbook?

A: Institutions have made different decisions regarding whether or not students need a textbook. Some believe it is important for students to see the course content in a hard-copy format; others believe that software accompanied by an online text is sufficient and view the hard-copy textbook as an unnecessary but temporary crutch. Still others make the hard-copy textbook optional depending on student preference. Making the decision about whether to require a textbook should occur *after* the software has been selected so that the kinds of resources included in the software are known.

Q: What kinds of problems can we anticipate regarding student computer literacy?

A: Assuming that students' ability to access Facebook or use a smartphone ensures their ability to use software is a common mistake. Many students like using computer software, especially because they have the chance to work with the software at home. Others, however, find computer work very stressful, saying they would rather be in a traditional classroom. Plus, many nontraditional students lack computer skills.

One solution is to develop brief training materials that help students get started using the software. Such materials could include resources that have already been developed by the software company. Some students can get started quickly by using the software and are willing to try different options; others prefer a set of instructions as to how to get started. Some institutions have also developed an online, orientation quiz on the software's features that students complete during the first week of the term. In finding answers to the quiz questions, students become familiar with the features of the software they will be using. Other institutions offer workshops at the beginning of each term for students who need to learn basic computer skills. Instructors and tutors should pay particular attention to technophobes to help the latter overcome computer anxiety, and they should work with them more frequently if needed.

Q: What kinds of technological problems can we anticipate?

A: Most technological problems occur during the early stages of implementation and involve, for example, periodic Internet outages (sporadic interruptions in access to the course software or campus network interruptions), late-arriving equipment, and software server glitches. Course management systems and delivery servers may need to be upgraded to more-robust enterprise versions. When the Internet is not available, it is important to have an alternative plan to engage students.

Q: Should students bring their own computers to the lab/classroom, or should they use those already in the lab/classroom?

A: Different institutions have made different decisions. Institutions with a laptop requirement create labs with tables and chairs, and students use their own laptops. In essence, every classroom can be a lab. The downside to that approach is that students may be more likely to visit other websites and neglect their course work. Thus, other institutions believe that students should use only computers that are in the lab/classroom, where access locations can be limited to those related to the modules. For testing, using lab computers with restricted Web access is important so that it is clear that students are doing their own work. Walk-around proctoring can address both problems.

Q: How can we stop students from doing things other than course work in the lab or computer classroom?

A: Internet browsing (such as on Facebook) during class time can be a distraction and interfere with students' time on task. Problem-solving websites create academic-integrity issues. You need strict rules and you need to enforce them. Students caught violating the policy must receive a severe penalty such as losing participation credit for the week. Be sure to state that policy in the course syllabus. Lab computers can be set to allow access to only certain Internet Protocol sites, and/or software can be installed that locks down Internet surfing. Also, insist that cell phones and other devices be disallowed. Instructors and tutors walking around the lab/classroom can observe what students are doing. In large classes where instructors are busy conducting in-class activities, undergraduate learning assistants can be particularly useful in this regard, providing other sets of eyes, ears, and hands in the classroom to manage the active-learning environment.

Q: Who should be responsible for providing technological support in the course?

A: There is no one-size-fits-all answer to that question because every course redesign differs in the kinds of online resources used, in the role of the campus technology organization that

supports the redesign, in the capabilities of lead faculty, in the availability of other personnel like undergraduate learning assistants to provide support, and so on. But someone needs to be designated the specific responsibility of providing or coordinating technological support. Often, what look like faculty members' philosophical objections to using more online work or other technologies are often only representative of concerns about the work and skills involved. Knowing that someone will be in charge of making the technology "work" tends to melt objections away. Having the course coordinator be responsible for setting up and troubleshooting online work is important to ensuring that the online components stay consistent—and emphasized parts of the course. And there are the obvious efficiencies in instructors' not duplicating the work of creating and maintaining course shells that should be identical across all sections.