Institutional Support Infrastructure for Online Classes

Ray Schroeder

Abstract

Providing the infrastructure to support online classes is analogous to building a new physical campus adjacent to the pre-existing one. Online faculty members have similar support requirements and online students have similar needs to the needs of their counterparts on the physical campus. If these infrastructure considerations are not addressed near the beginning of an online initiative, the success of the entire project may be jeopardized.

Online classes have taken the field of higher education by storm. One need only pick up any issue of the Chronicle of Higher Education from the past three years to see the pervasive impact that this new form of delivery of education is having on academe. The effects are monumental. Traditionally, many universities have been largely regional, drawing most of their students from within five hundred miles. However, the online movement changes that. Geographic location is no longer an issue. Students may as easily take a course of study from a university located on the opposite side of the globe as they can from a university in their own city. It is as if a hundred other universities had moved right into every city, every town, and every hamlet in the world. Universities are no longer primarily competing with other campuses for students in their region or even their country.

Competition is fierce; Enrollments and tuition revenue are at stake. And the pressure of that competition is motivating some campuses to move classes online before they consider the infrastructure necessary to fully support the faculty and students.

Both faculty members and students come to online learning with extensive experience in the traditional face-to-face classroom of the physical campus. They come with the expectation that the same kinds of support mechanisms will be available to them online as on campus. Based on those experiences, students and professors take for granted that the classroom will be there when they need to use it, and students assume that the professors will be available during regular office hours, that they will be able to participate in classroom discussions, that some sort of learning or tutoring service will be available, that tests can be offered in a secure environment, etc. Further, they expect that the same kinds of student support mechanisms and administrative services will be just as readily available to online students as they are to the on-campus students.

Unfortunately, many campuses are launching their online classes without addressing these expectations. The result will be disappointed students and low retention rates in those online programs. Students may migrate to campuses where they find a more robust infrastructure providing most of the support that they have come to expect on campus.

Infrastructure Support for Faculty Needs

Nearly every campus has a group of "cutting-edge" faculty members who lead the way in online learning. These are the ones who move ahead with their online efforts even before policies and support mechanisms are put in place. They often gain some recognition for their efforts. In some cases, they may even suggest that moving classes online is "easy" and encourage others to join them. But these faculty members are extraordinary, in that they do not fairly represent the capabilities of the faculty as a whole. Most faculty members lack the technical expertise to take on the task of constructing an online classroom without support. Further, the infrastructure support that is required for a single class is far different than that required for multiple classes or an entire degree program.

First, faculty members need access to computers. They need access not only to computers, but to updated computers reliably connected to the Internet with updated software and, in many cases, multi-media capability. Those choosing to stream their lectures or include audio/video material will need microphones and cameras if they are to develop their online materials in their offices. At the very least, they need ready access to multi-media computers in a laboratory. Appropriate software must be chosen to support a variety of online class delivery modes. Licenses must be obtained for either online learning packages such as WebCT, Course Info, or other complete packages that integrate the variety of components needed to support lecture delivery, conferencing, online quizzes, grade books, etc., or an array of individual software packages that will meet those needs. In short, all of the hardware, software, and connections must be in place before the faculty members begin developing their online classes.

Hardware, software, and connections are not enough, however. Doctoral study for most faculty members did not include instructional design for online delivery, software use, online copyright/fair use rules, and development of online class materials. Faculty members need training and ongoing support. A number of staff members must be made available to provide individual or group training on how to use the computer, software, and how to design classes for online learning. One-time training, however, is not enough. The faculty will need continuing support to help them over the rough spots. While some will be able to take one workshop and move ahead without further assistance, most faculty members will require assistance from time to time.

Campuses have approached this training and support in a variety of ways. Some universities provide formal training seminars through their continuing education departments. Others provide informal one-on-one training for faculty members before they begin their online teaching. In nearly all cases, however, campuses maintain a technology support unit with staff members who work individually with faculty to provide assistance in developing and maintaining the online classroom. A technical help desk for both faculty and students should be staffed during evening and weekend hours.

Some faculty members may never feel comfortable in posting their classroom materials to the Web. Perhaps these will choose not to participate in the online effort. Yet there are some in this group who are willing to respond to students, post grade assignments, and facilitate interchange online, but are not interested in the process of actually submitting and maintaining the online materials in the online classroom. If an institu-

tion intends to support this group of faculty members, it will need a larger group of technical support staff to maintain a one-on-one relationship with them.

Information Technology (IT) Network Needs

Online teaching is quickly becoming bandwidth intensive. A robust connection to the Internet and an array of web servers will be required to assure prompt "net response and reliable service." The number of online students coupled with the nature of material delivered will determine the bandwidth needed for the connection. Streamed materials and graphics-intensive sites will require greater bandwidth. In most cases, a DS-3 connection (44.743 mbps) will be the minimum bandwidth required. As the number of distant students and online classes increases, the bandwidth needs will increase. Servers must provide back-up power supplies, data back-up systems, and technicians able to trouble-shoot and maintain the hardware and software. It is crucial that the online service be reliable.

If a server were to crash in the middle or end of a semester and all data were to be lost, it would amount to a disaster for the students, faculty and campus. It would be the equivalent of the classroom building and the faculty offices burning down, incinerating all of the grades and records of the term. Back-up systems are just as necessary as fire alarms and sprinkler systems.

Another option is to outsource the servers and their support. The advantages of outsourcing are many for the smaller online program. With 50 or fewer classes online, this option may be the most cost effective and reliable. Far fewer personnel must be hired, less bandwidth to the Internet will be required, and round-the-clock service is ensured. Larger online programs are likely to find that they can provide a more efficient and responsive unit internally.

Web developers are needed to create the online classrooms and websites designed to support the online classes. Even when faculty use "turnkey" online classroom packages, web developers are needed to customize some of the materials that are to be placed in the virtual classroom. The web developers can build the linkages from the online classroom to the campus web page and other ancillary online support sites.

Thus, while there are a number of options available to provide the IT support for the online initiative, some on-campus technical support is crucial. The IT infrastructure is the online equivalent of maintenance, fire, police, physical plant, and grounds support for the physical campus. Just as a campus would quickly deteriorate without effective staff in these areas, so too will the virtual campus deteriorate without an effective IT operation.

Infrastructure Support for Student Needs

Most online students do not come by their network savvy naturally. These students need technical training and support analogous to that of the faculty. Students need training in how to navigate the online classroom, how to conduct research, how to communicate online with their professors and peers, and how to obtain the student support services provided to traditional on-campus students. This process may become somewhat complicated because the students are located in other states or even other countries.

Some campuses have met these training needs through the development of online workshops that students complete prior to taking online classes. These workshops serve to assure that all of the online students have at least a minimum knowledge of the technologies (computers, modem connections, software, etc.) required to successfully complete online classes. The workshops also provide the students with the skills needed to conduct research online, submit assignments, access lectures, download class materials, and correspond with their instructors.

In most cases, online students pay the same tuition as on-campus students. Yet on-campus students benefit from many facilities that will not translate to online delivery, such as the gymnasium, swimming pool, workout room, food services, dormitories, etc. However, there are other services, including the placement, health care, counseling, learning enrichment, tutoring, and the student newspaper that can be accessed. Online students are just as interested as on-campus students in finding jobs and starting careers. While the campus health service cannot diagnose student ailments over the "net," they can provide basic health information that is of interest and use to online students. Certainly online students are not exempt from needing the help of a learning center or tutoring. The student newspaper, delivered online, can help give online students a sense of belonging to the university.

Many of these important services have not yet been fully implemented by universities' online initiatives. Yet these services are ones that can play a role in the decision of a prospective student considering several competing online degree programs. The online campus that provides a wide range of student services is likely to be at a competitive advantage.

Many campus-based student organizations may also provide online services. Such groups as recreational clubs, religious organizations, discipline-based organizations, service organizations, and others may be able to provide an online presence that will allow the online students to participate. For example, a chess club could easily conduct interactive matches online. Access to these extracurricular activities goes a long way toward making the online student feel a part of the campus. Any university online initiative, to be successful in recruiting and retaining students, should ascertain which student services and facilities can be provided online and should provide them.

Infrastructure Support for Administrative Needs

The administrative needs of the online students, before registration, during enrollment, and even after graduation, must be met at a distance. A secure environment is needed for many of these transactions, including student records and credit card payment of tuition and fees.

Commonly, the very first contact a prospective student will have with a university will be through the campus website. It is essential that this website be inviting to the prospective student and that it provide the student with all of the information that he or she needs to make a college choice. The prospective student should be able to e-mail, phone, or fax appropriate members of the staff and faculty. Since the college catalog serves as a kind of informal contract between the student and the university, it would certainly make sense (and save money) to put the catalog online rather than printing and

mailing this to all students each year. The course schedule, likewise, should be available for on-campus and online students to peruse. A method of online or telephone registration must be made available for the distant students who cannot come to campus.

The bursar's office must provide some sort of secure payment method for tuition and fees, for the protection of both the student and the university. Other student billing and payment methods should also be available in a secured online environment.

Yet another secured environment should be created to support the online delivery of grades and unofficial transcripts to students. On-campus students can merely drop by the registrar's office to obtain a transcript of their coursework. It should be just as easy, or easier, for online students to get the same service. The registrar's office also receives petitions, processes academic waivers, etc. Once again, this sensitive information must be handled on a secure server and be available to on-line students.

In sum, all of the interactions between the student and the administration should be provided for on the web. Though the development of these online interfaces will involve expense, they promise to provide long-term savings in printing and mailing expenses. Ultimately, the ease of online communication may provide for faster processing and efficiency in handling interactions between the administration and the student.

Implementation of Online Support Infrastructure

Clearly, it is an enormous task to replicate, or nearly replicate, the on-campus student support infrastructure for the online student. Certainly, this task can be accomplished incrementally. But until it is fully accomplished, the online student will be at a disadvantage in the quantity and quality of services received for tuition and fee dollars compared to the on-campus student.

It would seem most appropriate to create a campus wide online infrastructure implementation team with representation from each of the above areas. This team could oversee the progress of the implementation and assure that important elements are not lost in the process. Just as the campus environment continually changes, so too will the online environment. The infrastructure team will need to periodically reassess the needs of the online effort. Their recommendations can be effected either by a team of web developers and other technical staff or by outsourcing or purchasing a turnkey package.

Summary and Conclusions

As we enter into the age of virtual campuses serving students at a distance, we must realize that the online movement is more than just electronic correspondence classes. It is more than simply online classes. It is, in fact, the delivery of the wide range of university services through this new and rapidly evolving medium.

Students will not long be satisfied with online classes alone. Assuming they pay comparable or even higher tuition and fees for their degree, they will soon demand analogous or expanded services from the campus. Competition in this online environment is no longer limited by geography or time. Institutions are no longer just competing for

students with other universities in their state or their region or continent. Students are already looking for the best value for their tuition. The reputation of the institution will remain paramount for many prospective students. But the academic support infrastructure, the opportunities for activities, and the accessibility of student services will certainly be considerations for a great number of students. To the extent that an online campus falls short in these support areas, it is likely to fall short in enrollment.

While many universities have begun delivering online classes, few have taken the next step to truly put their campuses online. This next step, the building of an online university, is an expensive one. Not only does it require equipment and training, it requires an enormous amount of planning and anticipation of needs. While less expensive than purchasing the land and buildings of a physical campus, the construction of an online university can still be a daunting task.

Yet the payoffs of this planning and development are enormous. The online campus will reach around the world, into places where universities have never previously existed. Online universities will have the opportunity to serve populations and communities that have never been served before. Those campuses that had previously been considered regional universities will now have an impact on distant markets. The potential impact is enormous.

Author Information
Ray Schroeder is professor of communication, having taught for 30 years at the Urbana and Springfield campuses of the University of Illinois. He currently directs the Office of Technology-Enhanced Learning, which supports the online delivery of three degree programs from the Springfield campus.

Ray Schroeder
Office of Technology-Enhanced Learning
University of Illinois at Springfield
P.O. Box 19243
Springfield, IL 62794-9243
Telephone: 217-206-7531
Fax: 217-206-7539
E-mail: schroeder.ray@uis.edu