Top 10 IT Challenges of 2000

by EDUCAUSE Current Issues Committee, Paul B. Gandel, Chair

Every year the EDUCAUSE Current Issues Committee compiles a list of the most critical challenges that could adversely affect the deployment and management of information technology (IT) and electronic resources on our campuses. This year we put a new spin on this tradition— we asked, EDUCAUSE members, what you thought were the most pressing issues through a Web-based survey administered by the EDUCAUSE staff (see the survey report on page 4). Four key issue types were identified:

• most strategic issues for your campus to resolve
• emerging issues with the greatest strategic impact
• issues demanding the most attention of the IT leader
• issues capturing the most campus resources

Here the Current Issues Committee members have described the top 10 challenges in the first area—IT-related issues that are most important for your campus to resolve for its strategic success—based on the survey results. Our goal is to initiate an active discussion of the challenges in all four areas. We encourage you to contribute articles to EDUCAUSE Quarterly about how your campus is addressing these challenges (send articles to Dena Noshek, EQ editor, at dnoshek@edufcause.edu).

Funding IT
In spite of decreasing costs of technology in the marketplace, college and university budgets for information technology and IT support systems continue to increase. Chief information officers (CIOs) continually seek funding to renew and replace PCs, administrative systems, network infrastructures, and instructional support systems and to provide competitive IT salaries, training, and additional staff to support new services. To develop effective IT funding practices, institutions need to address the following issues:

• Does our institutional strategic planning process address IT as a key element and link its funding to budget development? Do all units and departments plan together to optimize IT fund use?

• If IT administrative functions are distributed to departments, are central IT units and departments budgeted to budget IT expenditures jointly? Are funds requested for IT projects approved centrally to avoid duplication? Does the institution understand how critical it is to keep a sufficient number of currently trained staff to accomplish its strategic goals?

• How can the campus afford to update current technology and implement new technologies at the same time?

• How can we encourage institutional leadership to develop a "deep reserve" for funding renewal and replacement?

• To keep up with the demand for higher levels of customer (student) services, how do we determine what services we can afford to offer? Should we eliminate existing services to provide new ones or develop services on a cost recovery basis?

• How can we determine total cost of ownership (TCO) so we can reduce these costs? Should we investigate leasing strategies? Could standardization of hardware and software reduce our costs? Are site licenses used to the fullest extent possible?

• Should outsourcing services be considered? Can external companies provide IT services and support more cost effectively than internal organizations? Are some services better candidates for outsourcing than others and, if so, which ones? Is cost savings possible through consortial or partnership arrangements with other institutions?

Faculty Development, Support, and Training
Technology-enhanced teaching and learning is rapidly reaching a critical mass. Faculty committees are beginning to consider "faculty using information technology" in the hiring, promoting, and tenure-granting processes. Increasingly, professors can assume that students have ready access to the Internet and basic browsing skills. Faculty development specialists are less likely to have to teach HTML classes because many colleges are adopting user-friendly course-management systems. To provide the development opportunities and support that faculty will need to adopt course-enhancing technology, consider the following:

• Are faculty motivated to adopt technology to make their teaching more interactive, more collaborative, or more customized? What comes first in development efforts—teaching new computer technologies or examining educational philosophies?

• What is the primary barrier to faculty adoption of technology—lack of access to equipment, inequity of student access, faculty time, or faculty reward system?

• With whom should faculty developers work: curriculum redesigners or course redesigners? Graduate faculty or, in fact, faculty in many a few departments or a few faculty in many departments, faculty who teach distance learning courses or those who teach in the classroom?

• Is it more important to serve well the most advanced 10 percent of faculty computer users or to encourage some use of elementary computer techniques by 85 percent of the faculty? If the latter, which teaching techniques and software programs should be emphasized for adoption and which ones should be left for later?

• What is the primary role of help desk faculty need most—course design, technical training, technical consultation, or "grunt" work, electronic resources research, or quality documentation?

• Should we train and provide student technology advisors for special assignments with individual faculty members?

• How far can campus members be pushed to adopt standard hardware and software? Among the 40 products on the market (see www.ctt.bc.ca/landscape/), which course management system should be adopted as the campus standard?

• How can information on effective use of technology (both on campus and beyond) best be disseminated?

• Where in the organizational structure should the responsibility for faculty development be housed? What is the role of the library? What training tasks should be left to the departments rather than undertaken by central IT organizations?

Distance Education
Just-in-time lifelong learning and the growing desire to be educated anywhere and anytime are driving the demand for distance education. Colleges and universities are developing asynchronous learning environments and the associated services to support students involved in education from off the campus. As IT managers, we need to collaborate with our institution’s academic leadership to address key issues associated with off-campus learning:

• What should the standards of library service and collections be for distance learning? How will our institutions respond to the Digital Millennium Copyright Act?

• How can our educational institutions partner with others (public libraries, for example) to make access to computers reach more deeply into the external community?

• What is the role of the third-party content providers playing in education? Are they taking over the market? Will content continue to be developed by faculty or will publishers increasingly play this role?

• What support systems will be necessary to assist students who are taking courses at a distance, for example, student record, financial, and financial aid? How will instructional support (technical and help desk) be addressed for anytime, anywhere learners? What policy issues will need to be addressed with regard to serving students at a distance? One example is access to equipment, inequality of student records, financial, and financial aid. Which courses should be offered at a distance?

• What kind of authentication and authorization systems do we need to develop to support these policies?

• Should institutions partner with others to develop “virtual universities” and who might those potential partners include?

• What technical infrastructure decisions would best serve a national and global user base? Should worldwide service providers be used for Web pages and streaming media?

E-Learning Environments
The ability of information technology to fundamentally change the teaching and learning process has never been more apparent than now. Thanks to IT...
What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction? What changes are needed in physical learning environments? Will new e-learning possibilities force us into high-tech, low-touch situations or will they expand the range of communication and social interaction?

As information technology leaders, we can now create electronic learning environments capable of supporting new pedagogical approaches and creating new forms of learning communities. If so, how will we ensure all students have access and can take advantage of the new e-learning environments?

What steps are necessary to ensure e-learning issues are fully integrated into our campus business plans? How will we evaluate e-learning environments? How do we weigh benefits of vendor-supported, state-of-the-art integrated applications versus homegrown, tailored applications? How do we determine if off-the-shelf software will meet the institution’s needs? How do we manage the expectations for the delivery of new functions and control the scope of the project?

How do we create a campus culture that is receptive to and understands the criticality of an ERP system implementation? How do we develop a communications plan and strategy that effectively conveys the project’s direction and progress? What is the most effective way to use consultants to implement the project? What role should they play in relation to the campus staff involved in the project? What governance structure will provide effective leadership for the project and appropriately engage the key stakeholders?

What is the role of the campus IT organization during and after implementation? How can we attract and retain good IT staff for the project’s duration? How do we build a realistic budget for an ERP implementation and justify the often huge cost in light of competing institutional priorities?

IT Staffing and Human Resources

With increasing demand for IT services, our institutions are in the difficult position of needing more IT staff at a time when demand for these professionals outstrips the supply. Coupled with lower-than-market salaries and tight budgets, colleges and universities are struggling to recruit new and retain existing employees. How do we address this training challenge? How can we adequately train our existing staff to meet the new technology challenges?

IT Strategic Planning

The huge costs associated with IT investments argue strongly for good institutional planning. However, in a time when information technology is changing so rapidly, the concept of IT strategic planning is often reconsidered as oxymoron. The debate continues primarily regarding the definition of a strategic plan. Do we use the traditional definition, which calls for a massive, long-range plan of the type generally used during a strategic time period or do we see a strategic plan as an iterative series of short-term plans that address strategic institutional issues? Some of the key planning issues are as follows:

- How do we choose the best planning process for our campus? What benchmarking processes are we currently using? What are the costs and value associated with using consultants? To what extent do corporate models of IT planning fit the academy?
- Are the institutional goals supported by IT clearly articulated and accepted throughout the campus? If not, can such a process move forward or does IT planning work in a vacuum? Have senior leaders clearly articulated their support for IT?
- Are the IT organizational structures on campus respected for service, production, and strategic decision-making? How are the IT staff, faculty, students, and administrators involved in planning various constituency groups on campus, including IT staff, faculty, students, and administrators? Is there an IT advisory group or a series of task forces? Who has the responsibility for developing budgets, colleges and universities are developing a broad array of online services to meet the needs of students, faculty, staff, and alumni. The online service developments have been driven primarily by the need to adapt to the changing needs of these constituencies. However, as the demand for online services increases, the need to plan and manage these initiatives is becoming more critical.

ERP success or failure hinges on adequate budget, partner participation, plan quality, and IT staff and customer attitudes.

Enterprise Administrative Systems

There has been an increase in vendor-supported administrative systems in the past few years, prompted in part by Y2K compliance concerns but also by the need for new systems to support changing ways of doing campus business. To these ends, some institutions have selected vendors with good and flexible enterprise systems that could quickly accommodate new technologies such as Web-based services and e-business applications. Although experience with enterprise resource planning (ERP) systems has varied, some key elements involved in the success or failure of these system implementations include project budget adequacy, implementation partner participation, implementation plan quality, and IT staff.
officers, career services, and other units on campus. What can we do to ensure campus strategies for online student services are student-centered rather than driven by the processes and procedures of administrative offices? As more student services and courses are provided online via the Web, what are the technology architecture and system integration challenges? How can we provide not only the basic but also the customized transactions students are beginning to expect? What are the most effective means of authenticating and authorizing access so online resources and student information are secure? How can we ensure that students receive the same level of service whether they live on campus or use Web-based services from a distance? What does a ‘customer relationship management’ approach mean in higher education? How and by what office(s) should CRM be developed and coordinated? What are the most effective approaches to developing Web portals to serve students? What new opportunities will portals provide for creating new relationships with prospective and current students and alumni? What opportunities will portals provide to forge new partnerships among higher education institutions and between higher education and K–12? What are the appropriate roles for external vendors in providing online student services, especially portal technology? If we partner with vendors, how can we maintain the confidentiality of student information and not compromise our institutional identity and integrity? What policies should campuses develop or revisit given the challenges of Web-based student services, especially with respect to advertising on the campus Web site and using institutional trademarks?

**Advanced Networking Challenges**

New initiatives in local and wide-area networking are emerging in higher education. Internet2 applications will require end-to-end network connectivity, which will lead to major upgrades in campus networks. Voice, video, and data are merging into a common digital infrastructure, and connectivity will increase between wired and wireless networking. In this advanced networking environment, key issues include:

- How do we accurately measure demand for network services and predict future demand? When we consider a network redesign, how do we identify the spectrum of design philosophies? Where do we get expert advice that is not associated with the sale of a specific product or service? How do we redesign existing bandwidth to upgrade network class and connect to contemporary standards?
- How can we dynamically allocate bandwidth, routing paths, and priority traffic algorithms to ensure the success of mission-critical, data-driven services? What quality of service will new generations of enterprise systems require? Do we segregate residential networks from other campus networks to enable the application of different quality-of-service algorithms? Should quality of service become fee-based? Should residential students continue to expect unlimited access to networked data service? Should researchers with external support expect priority network service? Should research indirect cost formulas be changed to support quality of service?
- Have we finally moved from local modem pools to a reliance on regional and national Internet service providers? Can we develop partnerships that will encourage the deployment of advanced networked services in the communities surrounding our campuses? Will authentication standards be implemented for security in a Web-based environment, and will such standards lead to turnkey systems or will local development still prevail? When will interinstitutional authentication become a reality?
- How rapidly will voice and video become completely digital or will conventional and wireless technologies converge? What will be the future of our massive investments in analog telephone switching equipment? Do we have the capacity to deliver digital TV and streaming video in significant quantities?
- How do we prepare our institutions for further increases in network funding requirements? Is network service to remain an entitlement or become a service based on use and associated fees? If the latter, how do we manage the politics of the transition? Can we plan the current and future replacement rates for network hardware?

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The “E” Is for Everything

Richard N. Katz & Diane G. Ohlinger, Editors
EDUCAUSE Leadership Strategies Series, Number 2
Sponsored by ProvenWitner&Coopers

Organizations worldwide have embraced electronic commerce as one of the most important evolving trends. By 2020, transactions totaling an estimated $2.3 trillion will occur across networks. The shift from paper-based commerce to commerce conducted online will transform the ways in which universities and colleges conduct business. This shift will require new forms of knowledge and support for departments and organizations, raising the need for new strategies that we should consider that support our goals and objectives.

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- What is the most effective way to capture and use the skills, abilities, and knowledge of the greater campus community to help support campus IT needs? How can we better leverage the skills of the student body? What are the most productive roles for student employees? Can department or office clerical staff serve a role in supporting IT? Is using faculty members in support positions an effective or wise use of these precious campus resources? How can we be assured that the work of such non-IT employees is consistent with the goals and objectives of the IT organization?

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Licensing Digital Information: Policy Debates Hit the States

by Rodney J. Petersen

Just when you thought digital technology was going to make distributed learning a reality and networked information more ubiquitous, it suddenly got a whole lot more complicated when the passage of a little-known law—the Uniform Computer Information Transactions Act (UCITA)—passed the Maryland and Virginia state legislatures and will be debated in states across the country in the coming months. UCITA has the potential to radically transform (and threaten) higher education’s ability to acquire, access, and preserve digital information.

Electronic commerce activity is at an all-time high, and states hope to capitalize on the information economy by attracting more high-tech industries. The proponents of UCITA maintain that its passage is an essential ingredient for states to be viewed as “technologically friendly.” In Maryland, UCITA was included among the governor’s “12-point Information Technology Package,” which included legislation to promote e-government, combat Internet crime, ensure privacy protections for consumers, and recognize the validity of digital signatures for consummating contracts. Virginia, in an attempt to appease America Online and its other resident Internet companies, quickly passed UCITA with a provision that would delay implementation until July 1, 2001, to allow time for further study of this complex and lengthy bill.

UCITA provides a framework for contracts or transactions in computer information. Since contract law is a matter of state common law (resulting in the potential for different treatment and standards among the various states), the National Conference of Commissioners on Uniform State Laws (NCCUSL) has proposed that states adopt UCITA as a uniform approach to contracts for computer information. The closest parallel to UCITA is the Uniform Commercial Code (UCC) that governs the sale of goods and services. In fact, NCCUSL had withdrawn from the process earlier last year complaining that Article 2B was flawed in both process and substance. However, the attorney general from Vermont, which has the potential to radically transform (and threaten) higher education’s ability to acquire, access, and preserve digital information.

Controversial Provisions

There are several controversial provisions in UCITA. The complaints most relevant to higher education and the information technology community include its scope, insufficient attention to consumer protections, use of license terms to replace the balances provided under federal copyright law, legal recognition to “shrink-wrap,” or “click-through” license terms, and use of “self-help” for breach of a license term.

“Computer information” includes computer software programs, library databases, digital books and journals, and access contracts including agreements with Internet service providers. UCITA also provides the means by which facts compiled in databases can be licensed, essentially undermining higher education’s efforts at the federal level to prevent the extension of copyright law protections to databases that contain factual information.

Twenty-six states’ attorneys general have opposed UCITA because of its inadequate consumer protections. The proponents argue that it provides greater protections than exist under common law. However, the attorney general from the Maryland consumer protection division argued vehemently throughout the process that the protections were less...