

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 you, 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 future 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 Nishek, *EQ* editor, at dnishek@educause.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 required 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 far can we stretch replacement cycles to ensure an optimal rate of return on our investments? 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? Are 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 “facility 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 techniques or examining educational philosophies?
- What is the primary barrier to faculty adoption of technology—lack of access to equipment, inequality of student access, faculty time, or faculty reward system?
- With whom should faculty developers work: curriculum redesigners or course redesigners; graduate students or faculty; many faculty in 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 type of help do faculty need most—course design, technical training, technical consultation, “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 faculty members be pushed to adopt standard hardware and software? Among the 40 products on the market (see www.ctt.bc.ca/landonline/), 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 anytime and anywhere are driving the demand for

*Technology-enhanced
teaching and learning
is rapidly reaching
a critical mass.*

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 learners? How do we employ technology to facilitate distance learning, yet retain the quality of library collections for those who do not live near a primary site? What impact will site licenses have on distant-student support?

- How can we keep up with the changing instructional delivery systems for distance learning?
- How do we decide and commit to using systems, and then change them as needed?
- What are the impacts of intellectual property and copyright issues, and 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 role are 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 records, 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 policies. 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

we can now create electronic learning environments capable of supporting new pedagogical approaches and creating new forms of learning communities. As information technology leaders, we need to develop new services to support our campuses' changing needs. The challenges of creating and extending e-learning environments across public and private networks include:

- Will e-learning environments affect traditional teacher-centered instruction and promote more student-centered learning? Will e-learning lead to a reconceptualization of both traditional campuses and distance learning environments? How can e-learning environments be used effectively to enhance traditional face-to-face classroom teaching as well as distance learning?
- 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 spaces such as labs and classrooms to support new e-learning resources? What support structures do we need? How will this affect already burdened facilities and technology-support resources that can't keep pace with current needs?
- What new synchronous instructional delivery systems are required to support e-learning? How do we make these real-time information delivery systems reliable and effective? Will we have enough bandwidth and network service quality to support high-end synchronous multimedia communications?
- What new asynchronous technologies can we expect in the future, how will they change our learning environments, and what new possibilities will they enable?
- Will the cost of the e-learning environment continue to shift to students?

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 know when to take advantage of opportunities afforded through e-learning and when not to?
- What burdens will e-learning place on our legacy administrative systems? Will the new enterprise administrative systems enable e-learning environments by providing more effective administrative system support options?

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 solutions 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 selected vendors with good and flexible enterprise systems that could quickly accommodate new technologies such as Web-based services and e-business applications. Although experiences with enterprise resource planning (ERP) systems have 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 and

customer attitudes about the project. IT professionals need to be engaged in addressing the following key issues:

- How do we decide if the new system should be used as an agent for organizational change, for business process reengineering, or for both?
- 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 for ERP implementations? 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 IT staff. Key IT staffing challenges we must address include:

- How can we effectively communicate our campus's unique IT staffing challenges and ensure ongoing attention to the problem? How can we get our institutions to focus attention on the relationship between IT staffing and strategic institutional objectives?
- How can we create a partnership with the human resources (HR) departments on our campuses to benefit from their expertise? How can we work with HR to foster positive recruitment and retention initiatives, especially to streamline recruitment processes to compete more effectively in today's market? How else can HR help meet our staffing challenges?
- How can we make higher-education IT salaries more competitive with industry salaries? Can we restructure our compensation systems to be more skill and performance based, allow for greater job flexibility and options such as telecommuting or job sharing, and provide more benefits such as daycare and study leaves? With limited salary availability, what other items can we offer that will attract new staff? How can we envision the jobs of the new century and create new ways of working that will provide stimulating environments to help retain staff?
- How can we encourage our institutions to spend more time and money to promote themselves as an attractive place to work? How can we enhance the recruiting techniques of IT managers and the HR staff? Can we do a better job of recruiting our own students? Can we expand our workforce by selecting staff without IT skills and training them to be IT professionals?
- With the need for continuing technical education increasing and the cost

for that training rising, how do we address these financial challenges? How can we predict the next generation of required skills? 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 considered an oxymoron. The debate continues primarily regarding the definition of a strategic plan. Do we use the traditional

In a time when information technology is changing so rapidly, the concept of IT strategic planning is often considered an oxymoron.

definition, which calls for a massive, fixed plan doggedly implemented 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 benchmark 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 organizations on campus respected for service, products, and most importantly, keeping the institution at or near the cutting edge or is IT leadership in conflict? Have previous planning exercises delivered successful outcomes?

- What are the roles of various constituent groups on campus, including IT staff, faculty, students, and administrators? Is there an IT advisory group or a series of task forces? Who is providing input on new and developing IT products and services and who estimates costs of specific projects for planning decisions?
- Is there a pre-established budget into which the plan must fit or is the plan driving funding levels? What are the expectations of the campus for IT development? If unrealistic, how can the needed levels of funding be achieved? How can the IT planning process be integrated into the academic planning so resource allocation and use are mutually supportive?

Online Student Services

Colleges and universities are developing a broad array of online services to meet the expectations of their current or prospective students, who increasingly look to the Internet as the place to conduct business. Such online student services must be an integral part of a broader campus e-business strategy that integrates enterprise transaction systems, customized transaction systems, course management systems, portal technology, and customer relationship management (CRM). Key challenges in this area include:

- Who are the key stakeholders who need to be involved in planning and developing such an environment? What are the roles of IT professionals, administrative systems personnel, faculty, admissions officers, registrars, Web professionals, financial aid

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

Internet2 applications will require end-to-end network connectivity.

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 institution 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 evaluate 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 buildings to upgrade network closet space and conduits 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 become of our massive investments in analog

EDUCAUSE 2000 Current Issues Committee

Paul B. Gandel, Chair
Vice Provost, Information Services
and Dean, University Libraries
University of Rhode Island
gandel@uri.edu

David G. Brown
Vice President and Dean
Wake Forest University
brown@wfu.edu

Judith B. Caruso
Director, Applications Technology
University of Wisconsin-Madison
judy.caruso@doit.wisc.edu

Joanne D. Eustis
University Library Director
Case Western Reserve University
jde@po.cwru.edu

David R. Hoyt
Chief Information Systems Officer
Collin County Community College
District
dhoyt@cccdd.edu

Paul J. Kobulnicky
Vice Chancellor for Information
Services and University Librarian
University of Connecticut
knicky@uconnvm.uconn.edu

Roberta L. Lembke
Director, Academic Computing
St. Olaf College
lembke@stolaf.edu

Warren P. Lord
Director of Information Services and
Institutional Research
Wilberforce University
wlord@payne.wilberforce.edu

Margaret G. Massey
Vice President of Technology, CIO
Bethune Cookman College
massym@cookman.edu

Nazareno L. Rapagnani
Assistant Provost, Information
Technologies
University of Notre Dame
rapagnani.l@nd.edu

Charles R. Shomper
Vice Chancellor, University
of Houston System
Vice President, University of
Houston Information Technology
shomper@uh.edu

James F. Williams II
Dean, University Libraries
University of Colorado at Boulder
james.williams@colorado.edu



Seminars on Academic Computing (SAC) e-Everything: Pipe Dreams to Harsh Realities Snowmass Village, Colorado, August 4-9, 2000

University Executive Seminar, August 4-6
New Directors Workshop, August 5-6
Directors Seminar, August 6-9

The annual Seminars on Academic Computing offer a stimulating forum for the exchange of ideas. If your responsibilities include computing, communications, information resources, or information technology services in higher education, the SAC meeting is for you.

SAC participants engage in a wide-ranging discussion guided by expert faculty about new developments and ongoing issues in academic computing. In less structured sessions participants exchange information, discuss their goals and challenges, and spin out new ideas and solutions.

Directors and managers of computing, information, and communication services, as well as executives, provosts, librarians, and faculty, will find the core program—the Directors Seminar—a unique opportunity to focus on the major challenges facing colleges and universities today. A University Executive Seminar and a New Directors Workshop add depth and breadth to the overall SAC experience.

For more information:
303-449-4430
303-440-0461 (fax)
sac@educause.edu
www.educause.edu/sac



Seminars on Academic Computing is an EDUCAUSE affiliate

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?

Support Services Demands

Campus IT organizations could surely edit Ben Franklin's pronouncement to read "nothing is certain but death, taxes, and the rising demand for IT support services." Across the country, campus IT centers are challenged to find ways to provide new services, enhance existing services, and extend the availability of those services. As IT professionals we need to engage our organizations and those who use our services in serious discussions about how we can meet this

challenge. Issues that need to be addressed include:

- How can IT organizations better understand the real support needs of faculty and students? How are we using technology itself to help us track and monitor those needs? What strategies might an IT organization use to ensure that the services provided match the community's needs?
- Is there a cost effective way to organize and deploy support services? Can IT organizations continue to expand to meet the rising demand for service? Is it possible to provide support 24/7 in a cost-effective manner? Can technology be used to provide additional or supplemental support and, if so, will users be comfortable with this kind of support?
- 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

*Nothing is certain
but death, taxes, and
the rising demand for IT
support services.*

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?

- How might IT organizations creatively engage individuals from off campus to

help support the campus IT needs? For example, how might we tap into the technically savvy network of alumni or friends of the institution and what roles could they assume?

- Are there new organizational support models that we should consider that distribute responsibility to departments so support is available to those who need it at a more local level?

These issues will affect all of our institutions in one way or another. Remember your network of colleagues whether it be contacting them for help in addressing these challenges or sharing your solutions to help others. *e*

Paul B. Gandel (gandel@uri.edu), chair of the Current Issues Committee, is vice provost of information services and dean of university libraries at the University of Rhode Island.

The "E" Is for Everything

Richard N. Katz & Diana G. Oblinger, Editors
EDUCAUSE Leadership Strategies Series, Number 2
Sponsored by PricewaterhouseCoopers

Organizations worldwide have embraced electronic commerce as one of the most important evolving trends. By 2003, transactions totaling an estimated \$2.3 trillion will occur across networks. The shift from paper-based commerce to commerce conducted over networks will transform the ways mainstream colleges and universities conduct business. This will ultimately lead to fundamentally new approaches to supporting and fulfilling institutional missions through e-business and e-learning. Second in the EDUCAUSE Leadership Strategies series, this volume outlines major opportunities and challenges for colleges and universities as they:

- evaluate their readiness to carry out their business online
- build technology infrastructure and expertise to support e-commerce
- rethink campus and national data systems in an e-learning environment
- establish online business relationships with suppliers, partners, and consumers
- safeguard financial assets and ensuring network security
- navigate the complex policy environment of networked education

Written for leaders, administrators, and policymakers.

Jossey-Bass Publishers May 2000 118 pages

EDUCAUSE member price \$17, nonmembers \$20

A complimentary copy of the book has been sent to the primary representative at each EDUCAUSE member institution and organization; additional copies may be purchased from Jossey-Bass (see www.josseybass.com) or from EDUCAUSE (see www.educause.edu/pub/pubs.html#books).



See the EDUCAUSE Web site for details at
www.educause.edu/pub
or contact EDUCAUSE at
info@educause.edu or 303-449-4430.

e
EDUCAUSE