

The explosion of Internet technology and World Wide Web-based technology has challenged student affairs administrators to contemplate and implement alternative forms of service to students and other college and university "clients."

The Integration of Technology with the Management of Student Services

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In recent years, the administration of student services has undergone radical transformation as extraordinary technological developments have substantially altered the processes by which information is collected, stored, and accessed; the systems by which communication is enabled; the structures by which transactions are conducted; and the methods by which entertainment is delivered. Each technological innovation has challenged student affairs administrators to contemplate and implement alternative forms of service to students and the many other "clients" supported by colleges and universities. The changing landscape engendered by this technological revolution has provoked entirely new ways of thinking about the delivery of services typically found in a college's student affairs portfolio. Nevitt Sanford's exhortation to "challenge and support" students (1962) has taken on new meaning in light of relational and networked databases, prolific and assertive e-mail pundits, Internet technology and other World Wide Web-based transactions, and information dissemination and on-line query servers.

Concurrent with these technological changes, the core mission and services of student affairs have undergone, and continue to undergo, fundamental revision. The infrastructure for the profession's theoretical foundation and practice faces review and reconsideration from those within the profession and throughout higher education (Garland and Grace, 1995). In this decade, student affairs has begun a migration from an independent co-curriculum, predominantly focused on the psychosocial development of traditional-age college students, to a partner with faculty in a learner-oriented enterprise. The intersection of the technological tumult with this shifting mission for student affairs necessitates significant changes in the management of student services.

Unit directors and coordinators can no longer simply replicate reliable methods of years past. Senior student affairs officers cannot rely on traditional forms of recruitment, service delivery, and retention. The historical bifurcation of business practices and student services has little validity in a customer service-oriented, technology-driven environment in which face-to-face delivery of services is replaced with computer screens, voice mail, and cable television.

The contemporary delivery of student services will increasingly be in the form of distant and virtual contacts, less restrained by office hours and staff availability. Technological and consumer-influenced changes necessitate a fundamental shift in the forms and functions of service delivery. These shifts further necessitate changes in the management principles and methodologies that guide student affairs, and further require that student affairs administrators understand the factors underlying these changes as well as the implications of applying technological developments to student affairs and its functions.

Factors Influencing Student Affairs and Technology

Several factors will determine the role technology will play in the management of student services.

Economic Forces and the Reengineering of Student Affairs. Technological changes are both the result of and stimulus for alternative management practices. For example, recent economic challenges to higher education have generated, on many campuses, a critical review of the functions and processes associated with student affairs. Faced with expectations of accountability and efficiency, student services (frequently along with other administrative services) are being targeted for restructuring and reengineering, which often require the adoption of technological applications as a substitute for human intervention (Carr and Johansson, 1995).

For example, the submission of a 'paper' application to a college or university will soon become an anachronism as on-line applications and electronic submission processes become the norm. Scanning devices will prescreen and categorize the applications according to predefined eligibility criteria. The first time a human being looks at an application may be after an initial batch of rejection letters has been e-mailed. (Will families look for distinctions between fat and thin e-mails?) Additionally, electronic submission of applications will enable direct entry of student information into record systems without need for data-entry personnel. The outcome will be fewer staff, quicker response, lower cost, diminished error rate, and instant access to information.

Throughout student affairs, as with many administrative units on college campuses, managers are expected to do more with less, and technological solutions have emerged as perceived panaceas for concerns about productivity and cost. However, the benefits of replacing personnel with technology to enhance productivity and reduce cost are unsubstantiated. In a human service environment like student affairs, the (as yet) immeasurable qualities associated with human interaction make it extremely difficult to determine gains and losses when technological applications serve as surrogates for personal contact.

Campuses are also engaged in an accelerated adaptation to various technologies, with particular focus on installation and use of networked and Internet-based services, state-of-the-art telephone applications, and in-house video broadcast capacity. World Wide Web access methods now allow for user-directed applications and interventions. Students can now reserve rooms in the campus center, review their transcripts and billing status, or sign up for on-campus housing from the comfort of their rooms. New financial management systems are compelling institutions to upgrade hardware and to raise the level of computer literacy among all levels of employees.

Student affairs staff are faced with these same challenges. Often these changes are prompted by institution-wide reforms that leave administrative and student service departments little choice but to adapt, regardless of cost, competency, or convenience. This is not to suggest that these changes are all inappropriate. In fact, conversion to appropriate uses of technology will inevitably increase efficiency and enhance user satisfaction, but the challenge will be to coordinate both the pace and scope of the use of technology in the human services that compose the core of student affairs.

Technological innovations have created an abundance of opportunities for novel practices and enhanced services frequently characterized as "real-time," "student-centered," and "any time, any place." For example, instead of seeking extended hours for academic advising, students can submit e-mail inquiries that are responded to by peer, paraprofessional, or professional advisers depending on the nature of the question and the level of expertise required. This electronic triage system ensures that appropriately trained (and paid) staff are deployed where needed.

Student Service Demands and Patterns. Contemporary student-institution business transactions require innovative approaches and alternatives. Today's students are twenty-four-hour, seven-days-a-week customers who reject the service disadvantages of traditional nine-to-five business practices. Technology provides extended access to information, interaction, and client-centered applications. Electronically, the campus becomes a twenty-four-hour domain.

In the vernacular of the 'quality' movement (Cornesky, McCool, Byrnes, and Weber, 1991), student services must accommodate at least two independent sets of clients. Some clients are 'internal' customers--administrative colleagues, and personnel and purchasing counterparts--who are more likely to be bound by traditional working hours. Students--who some would characterize as "external" clients, encumbered by classes, work, research, and other daytime obligations--are increasingly seeking access to support services at times most convenient to them. For undergraduates in particular, the most convenient time is frequently well after the midnight bells have tolled.

At nonresidential institutions, students seek remote access from home and work. They have become increasingly resistant to cumbersome (and costly) visits to campus for seemingly trivial interaction with support personnel and clerical service providers. They expect and prefer that inconvenient trips to campus for bill paying, course registration, and even library services be

reduced. Advances in distance learning have enabled academic instruction to be delivered directly to students' homes by phone, Internet, and cable mechanisms. Currently, several western state governors are exploring the possibility of a fully electronic university unencumbered with classrooms, physical plant, or any physical environment (Baker and Gloster, 1994). Consider the implications of a campus-free college for student affairs and its support mission.

Technological Developments. The technological environment on many campuses is evolving rapidly and comprises numerous elements. These include information dissemination, transactional interaction, communications applications, and entertainment and educational technologies.

Information Dissemination. Technology-based information dissemination occurs through an ever-burgeoning Web environment ('zines, links, and clips, campus-managed or contracted cable television bulletin boards, CD-ROMS, auto-attendant telephone systems, and the like. On a networked campus, faculty and staff can enjoy instant and up-to-date access to student records. Academic advisers can now review accurate transcripts when assisting with curricular matters. Health providers can review immunization and health insurance records, and medical records can be linked to general student information while retaining appropriate confidentiality and privacy. Fully inter-woven 'cradle to grave' student record systems, currently under development by a number of student information system providers, will enable recruitment contacts, admission profiles, housing choices, club and organization memberships, demographic information, course selections, career pursuits, and alumni facts to be stored in a single, universally accessible database, secured by password and authorization limits.

Transactional Interaction. Transactional interaction--defined as the conduct of a business activity as opposed to the simple transmission of information has increased exponentially with the advent of the Internet and the World Wide Web. Web pages provide extraordinary access to campus on-line services and eliminate the need for costly, time-sensitive, paper-based forms and applications. Now, from residence hall rooms or off-campus homes, Students can update personal data, order tickets to campus (and worldwide) athletic and entertainment performances, self-schedule appointments with counseling and health staff, and took up e-mail addresses. Every transactional activity has become a candidate for electronic interaction. As campuses, particularly residence halls, are increasingly wired for high-speed Internet access, technology proponents identify more and more applications for conversion from office-centered services (delivered at fixed sites) to student-centered services (delivered to students in their homes and gathering places).

The use of 'smart cards' is likely to become more popular in coming years. Used more prolifically in Europe (which has invested less than the United States in networked wiring), smart cards feature small memory chips that store personalized data such as medical records and credit authorization information. These cards have particular value in highly confidential settings where central storage of personal data is suspect, and they may prove espe-

cially useful in the student health and counseling domains. For example, in these settings, smart cards allow highly confidential information to be made available to medical providers without the need for a centralized data network.

Many campuses are seeking to provide a one-card environment in which students can use their university identification card as a debit-credit card. This card is also expected to serve as a security entry device, food service access card, and as a purchasing vehicle for campus vending operations and the campus bookstore. Many campuses have even developed arrangements with local retailers who accept the college card for business transactions. Some enterprising institutions derive a revenue stream from these partnerships.

Transactions by phone remain popular and continue as a primary or backup process for course registration and grade inquiry. Newer uses include voice mail and call conferencing, especially on campuses featuring newly wired residence halls. Of course, the telephone remains a primary form of communication for students and administrative departments, but auto-attendant Systems have replaced receptionists and operators, and the student public seems increasingly used to (though frustrated with) 'for . . . press four.'

No form of communication has had more impact on the college campus than electronic-mail (e-mail). At many institutions, e-mail competes with the phone as the first choice for person-to-person dialogue, and the volume of e-mail traffic has forced an increase in some institutions' computing infrastructure. Electronic access to anyone with an e-mail address (including trustees, presidents, and deans), coupled with the mass communications capacities of distribution lists and electronic 'carbon copies,' has dramatically (and frenetically, in many cases) altered work patterns and protocols. The implications of e-mail communications are varied and complex, and will be further explored in a later section.

Entertainment Technologies. Entertainment technologies have advanced, perhaps far quicker than other technology applications, and have moved into venues well beyond expectations. Fueled by the insatiable hunger of the public and funded by the financial thirst of the marketplace, the entertainment industry has wasted no time with the development of hundreds of CD-ROM-based adventure games. Other than the few real pinball and foosball games left for traditionalists on campus, most student union recreation centers now feature a wild array of electronic game machines and simulation activities. Of late, though, most of these games are available in desktop computer format, eliminating the need altogether for campus center game rooms. In fact, twenty-first-century campus centers will face an even more challenging task to offer social gathering opportunities that compete with the abundance of solitary electronic entertainment options available for students.

Television use is likely to advance as students come to campus with home experiences that will include one hundred (or more) cable TV options. The deregulation of the cable industry will significantly influence programming options for campus broadcasting systems. A more competitive cable environment will enable campuses to choose among program providers and forms of

signal acquisition. This will have substantial impact on the costs of campus cable systems already in operation and on the installation choices and costs for campuses contemplating new installations.

The Internet is replete with gaming (and gambling), but of particular interest to campus life have been virtual reality applications such as MOOS (Multiple Object Oriented Structures), which serve both entertainment and educational functions (Crump, 1996). Virtual reality games allow faculty and staff to engage in simulation exercises that support experiential learning with minimal risk.

Educational Technology. Educational technology has advanced well beyond the days of the overhead projector and videodisc. Classrooms are being replaced with learning centers that feature full Internet access, computer work stations at every student's seat, "smart boards" that print out or download instructor's "chalkboard" notes, and the latest in audio, video, and teleconferencing capacities. Web-competent faculty are creating class home pages with links to information appropriate to the course syllabus, class notes, homework assignments, exemplary papers, and various course-supporting elements. The boundaries of the classroom are permeated by continuing discussions out of class, enabled by course listservs and topical discussion groups.

These days, though, technological applications developed for one venue frequently migrate into another one. Entertainment products find favor among the computer modeling community, and information dissemination applications become public relations instruments serving a variety of administrative functions. Collectively, these and many other technological advances have fundamentally changed the way colleges and universities operate. The implications for the management of student service delivery are highly significant.

Management of Student Services in a Technological World

The administration and management of student services and the organization of a student affairs division are quite different when considered in light of changing student needs, contemporary institutional administrative and educational practices, and societal expectations for higher education. Collectively, every college and university stakeholder wants efficiency, accountability, and assurance of a return on investment as tuition contributors, donors, and tax-payers (Gose, 1996). Student affairs leaders-including senior officers, department heads, mid- and entry-level professionals, and faculty in student affairs-higher education administration-are responsible for responding to these demands. The following sections provide a review of the implications of technology in relation to various aspects of the management of student services.

Economic Implications. Perhaps most profound of the ramifications of technology is its fiscal consequence on the management of student services. Several elements contribute to this impact, including desktop hardware and

software, student record and other large-scale computer applications, and specialized applications associated with specific student services.

Desktop computing standards have been raised rapidly as word processing, spreadsheet, presentation, and various user programs have become more complex and memory-starved. It seems as though new and more robust processors, larger-capacity memory chips, and faster CD-ROM drives are introduced monthly. Nearly as quickly, software upgrades are introduced that take advantage of but also require the latest, largest, and fastest hardware components. What, then, is the appropriate desktop equipment for student affairs personnel? By what standards should department heads or the vice president or dean determine what desktop equipment is necessary? How can student affairs stay current with such rapidly changing standards?

The development of a desktop upgrade and replacement plan is one of the critical management decisions facing student affairs administrators. Computer costs may be dropping, but more and more members of the student affairs staff must be re-equipped to be productive. Entry-level hall directors, physicians in student health, organization advisers, and, in many cases, dozens of work-study employees all need contemporary hardware to process purchase orders, prepare text documents, communicate via e-mail, or access the Internet.

The cost implications are enormous. Assuming a four-to five-year replacement cycle for upgraded hardware, student affairs managers must plan for a 20 percent replacement cost annually. In a well-coordinated planning environment, these dollars may be recaptured from personnel savings resulting from reengineering activities that use technology in place of staff (Hammer and Champy, 1993). In many cases, though, this goal of recapturing funds through personnel replacement may be difficult to achieve, and student affairs leaders must accommodate the financing of new technologies as well as salary and benefit increases.

Software costs place substantial demands on student affairs budgets. Though common desktop applications such as word processors and spreadsheet programs may be dropping in price, specialty applications for medical appointment scheduling, residence hall assignments, student record systems, and student union room scheduling are extremely expensive and require state-of-the-art equipment.

For student affairs managers, attending to the costs of technology may yet prove to be the most difficult part of adjusting to the technological era. Response to each of the hardware and software needs will carry a substantial -price tag; with fewer new dollars on the horizon and more equipment needing to be purchased, personnel and functions may be the primary victims of the technological requirements of the new millennium.

Competency and Professional Development. The competency gap between the computer literate and the computer phobic in student affairs grows wider with each new generation of machines and programs. Those who have resisted the accessibility of e-mail and the precision of electronic spreadsheets will be even further challenged to consider novel applications of Web

transactions and electronic distribution lists. on-line calendar programs and graphical presentation software may prove to be insurmountable burdens to those student affairs staff who have had a long history of index cards, day-timers, and typewriters.

Professional development opportunities are more critical than ever before in the technological world. Contemporary (and highly powerful) equipment serves little use to the underprepared, and student affairs leaders must provide ongoing training for staff in order to maximize equipment value. Competency requirements vary substantially for different levels of student affairs management. Entry-level staff are most likely to use standard office support programs (word processing and so on), unique over-the-counter software applications, and various network applications, such as e-mail, Web surfing, and the like.

Increasingly, new professionals will enter the workplace with far more advanced computer skills than their supervisors; they will be frustrated by aged hardware, limited access to software (and limited budgets for purchases), and the narrow vision of those above them in the hierarchy. On the other hand, the training needed for this group may be less technical than what is required for middle managers and senior student affairs staff who are less skilled in recent applications.

Senior staff must be familiar with the appropriate utility of technology to support their program's mission and goals. This means staying current with user applications, system needs, network structures, and skill sets essential for support staff. The contemporary management team for senior student affairs staff must include a computer consultant (either on staff or on retainer) and at least one undergraduate home page author who is likely to be most current in the use of contemporary computer applications and Web scripting.

Management by E-Mail. No single technological invention has had more influence on management practices for student affairs (and, perhaps, all industries and institutions) than e-mail. Electronic communication is instant within the campus (and increasingly throughout the nation), and generally provides relief to the frustrating telephone tag that busy staff often play in daily communication. E-mail, however, offers its own frustrations and challenges, associated with frequency, direct access, miscommunication, personal-professional workplace issues, and confidentiality (Taber, 1996).

@ Electronic communication is burgeoning as campuses, industries, and homes become increasingly wired. Intracampus e-mail has exploded, as staff more regularly choose to type a note than risk encountering a busy signal or voice mail (another extensively used tool). Newer e-mail packages provide "nickname" functions, group lists, and auto-response features, all of which have encouraged even greater reliance. Increasingly, meeting announcements, agendas, and minutes are electronically distributed. E-mail has become, for many, the communications vehicle of choice to launch simple missives, back and forth dialogue (until "chat" modes become more widely available on campus), lengthy diatribes, and "flaming" critiques.

The proliferation of electronic messages has encouraged many to keep e-mail "boxes" on their computer screens throughout the work day --- creating a source of work interruption, a reactionary work environment, and an absence of solid planning and thinking time. The managerial challenge is to establish a workplace environment in which e-mail is used productively to inform, communicate, and disseminate information. Functional 'netiquette' may not be forthcoming as larger segments of American society gain access to e-mail opportunities, but student affairs-with its legacy of finding accommodation between human and business services-may be well suited to set healthy trends for best practices.

Another by-product of the electronic revolution has been the establishment of direct-access linkages to anyone who has an e-mail address. Students, parents, trustees, and vendors have discovered the value of direct communication to the most senior administrator whose e-mail address can be identified. The traditional communication protocols and administrative practices, which expect the person closest to a problem to resolve it, are now threatened as customers and clients send messages to deans, vice presidents, and even presidents.

Operating principles and practices will likely evolve rapidly. These will enable administrators to acknowledge receipt of e-mail complaints, requests, or suggestions yet allow for re-assignment of response to the appropriate local staff member. Given the high traffic volume associated with student service functions, student affairs staff are well suited to develop such procedures.

Many people have experienced the occasional embarrassment of a misdirected e-mail. The more pernicious problem posed by e-mail is a miscommunication generated by the reader's misunderstanding of the intended message. The sometimes excessive use of e-mail can stimulate carelessness in the quality of correspondence that, subsequently, can result in misinformation and all its confusing ramifications. Electronic communication also creates an explicit, documented 'paper' trail that can compromise the confidentiality of correspondence intended only for the initial recipient. Further, such correspondence can be altered or edited in ways unintended by the original author and forwarded on to others despite the author's preferences.

The legal status of e-mail once sent is currently the subject of significant legal and ethical discussion. Several trend-setting lawsuits seem to suggest that, once received, electronic communication becomes a public document whose subsequent redistribution cannot be governed by the original author. Other case law has confirmed management's prerogative to monitor e-mail and to establish rules and limitations on its use. All of this suggests that the use of e-mail as a management and communications tool must be carefully considered and appropriately used. Chapter Four explores the issues related to the confidentiality of e-mail correspondence in more detail.

Electronic technology, coupled with the proliferation of Internet service providers (or direct dial-in capacities at various colleges and universities), has

blurred the distinctions between work and home. E-mail and Internet addictions have become documented maladies. Student affairs staff, prone to long working hours, are exceptionally vulnerable to the need to stay 'connected' throughout the day and night. Senior student affairs leaders set the standards, and it is critical that expectations for checking and responding to e-mail correspondence during "off" hours be established and reinforced.

E-mail is also inappropriate for time-sensitive or emergency-related information. E-mail is a poor substitute for phone conversation (or even a voice mail message) when the sharing of critical information or a timely request is required. Fundamentally, e-mail must supplement personal contact, not replace it.

System administrators suggest treating e-mail like a postcard: given the millions of messages transmitted over the Internet, it seems unlikely that anyone will intercept and read a particular message. However, like a postcard passing through the local post office, an e-mail message could be read by anyone in the electronic loop (such as a system operator or technology manager) who deliberately chooses to do so. As such, all e-mail should be treated as publicly accessible, and confidential information should rarely be transmitted this way (at least until encryption methodology is perfected). Caution is also appropriate in using e-mail to send information or commentary intended for a limited number of recipients. With a couple of mouse clicks, an angry retort or a politically sensitive (or insensitive) remark can be forwarded to one or a thousand people.

E-mail use can be extremely helpful, especially when appropriately used to communicate information. It can also be quite destructive, such as when supervisors offer performance commentary or when coworkers insist on serial e-mail in place of simply walking next door for a face-to-face conversation. Good e-mail management practices are critical to the effectiveness of student service administration.

Managing Student Services in the New Millennium

In 1982, IBM announced the arrival of its new personal computer. "Loaded" with 64K of storage, this remarkable machine featured software and hardware elements previously unheard of and sought to challenge the new market dominated by Apple and Xerox computers. Now, barely fifteen years old, the personal computer is nearly as common as the telephone and more powerful than twenty of those first machines.

What can we expect in five years? History dictates that most predictions regarding technology will fall woefully short of reality. Will wireless technologies relieve latecomers from the need to install costly infrastructures in residence halls? Will cable modems become the electronic transmission option of choice for phone, video, and network communications? Will satellite dishes shrink to the size of watches and be worn on wrists as individual personal communication devices?

For the remainder of this decade and into the twenty-first century, service managers will make critical decisions informed by technological prognosticators and best guesses regarding the future. Some elements are certain: residence halls must have contemporary voice, video, and data access wired directly 'to the pillow'; administrators must become adept at using all forms of electronic communication and transaction to enhance service delivery; and every student affairs practitioner must become nimble at adjusting to the latest technological offering. Take, for example, the Internet and the World Wide Web. At the midpoint of this decade, Web platforms for service delivery were not in consideration. Today, literally every information collection and transactional activity is a candidate for Web transformation.

From a management perspective, this transformation means that every student affairs staff member must have Web Expertise available, and users must have access to powerful computers. Dollars must be reallocated to support these efforts, and the deployment of staff may be unique in an environment where students connect with necessary services from home. The key management trait to be nurtured and developed for the new millennium is adaptability. The pace of change will accelerate as higher education confronts challenges to its credibility and as new technologies evolve. The adaptive student services manager will

- Stay fully informed about emerging technologies
- Recruit staff invested in using technology
- Reserve funding for 'opportunity investments' in experimental applications
- Seek partnerships with technologically adept corporate partners who offer expertise unavailable on campus
- Adjust staff sizes and hierarchies where appropriate
- Establish productive workplace practices
- Use off-site employment opportunities such as telecommuting in applicable settings (for example, in accounting or data management functions)
- Consult broadly through electronic interchanges
- Insist on expanded professional development activities for all staff
- Balance electronic interaction with significant personal contact
- Operate in greater collaboration with academic and administrative colleagues
- Sustain student learning as the core value to be cherished.

Jones notes that "the adoption of technology which will abolish dirty, dangerous and dehumanizing work must be welcomed unequivocally, but we must assert the right to choose appropriate types of technology at our own pace and to express a preference for those which enhance and extend human capacity, dignity, diversity and understanding" (1984, p. 238). Student affairs managers face similar challenges: to choose those technologies that support institutional mission and goals, professional practices, and student preferences without sacrificing the humanity central to the profession.

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When guided by critical learning principles, the World Wide Web and other aspects of the Internet have rich potential to foster student involvement and learning.

Current and Emerging Applications of Technology to Promote Student Involvement and Learning

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Imagine the thoughts and feelings going through the minds and hearts of educators five hundred years ago when the printing press was invented. It must have been exciting to envision the multitude of teaching possibilities for reaching large audiences with reliable histories, maps, astronomy lessons, and much more. The ability to engage students in written thought extending beyond the lecture must have seemed like a teaching panacea. Not only the written word but illustrations and artistic works could be reproduced for an extended learning community.

Skeptics? Some may have held fast to the value of real experience. They may have argued that mass printing would further the separation between primary experience and thought. Storytellers may have worried they would be put out of business by the abstract written word. Other skeptics may have argued that only learned, religious scholars who knew how to read would have access to information. Would the renaissance of knowledge confine itself to a select few? What if demagogues used it for devious purposes? What if idle youth used it to avoid working in the fields?

In all likelihood, the debate did not significantly alter the outcome. The new technology, powerful and dynamic, was embraced, and it moved through

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