

## **Information Technology at Small Colleges**

**David Cossey**  
**Chief Information Officer**  
**Union College**  
**807 Union Street**  
**Schenectady, NY 12308**  
**518-388-6293**  
**cosseyd@union.edu**

Small colleges have unique challenges with respect to their information technology environments. It's easy to forget sometimes that small colleges are not simply small big colleges, and that IT needs to be considered in a particular way, especially because of its associated costs. For one thing, the senior administration at a small college may be less likely to be fully aware of what's going on in higher-ed IT than their counterparts at larger institutions.

Right now, technologies that are receiving increasing attention at small colleges include all of the following:

*Wireless connectivity.* There is a growing demand for ubiquitous computing and access. One of the ways this is being manifest is through the deployment of wireless access to the campus network and the Internet. Most notebook computers and other devices (including PDAs and even cell phones) are coming with wireless access. This is a major player in making "anytime and anywhere" access possible.

*Administrative computer systems* (sometimes referred to as ERP [Enterprise Resource Planning] systems). Administrative computer systems are increasingly integrated systems. As these systems become more sophisticated, integration makes sense. The IT people who maintain these systems need special skills. Non-integrated systems represent a potential for the systems people being segmented or the need for more people. A single integrated system can be managed by fewer people than can two or more disparate systems.

*Notebook computers.* Students, faculty members and administrators are choosing to purchase notebook computers in ever-increasing numbers. Notebook computers provide great convenience, enabling a person to have a portable desktop/presentation/research workbench. Prices continue to fall, and coupled with new capabilities (e.g. built-in wireless capabilities) the convenience of a notebook is attractive to many who are no longer confined to work in a given space at a desktop computer. This increase use of notebook computers brings up issues about who is responsible for their upkeep and maintenance, especially as their use is increasingly integrated into classroom work.

Tablet computers are also receiving increased attention. The convertible models have a keyboard so they can be used as notebook computers, but they also have the capability of being used as a slate tablet. In the latter mode they can be used much as a notepad to take notes. Further, they can be used in a text-recognition mode, or they can be used to take notes much as one would use a notepad with a pen or pencil. Tablet PCs are just beginning to hit the consumer market, which should produce lower prices. They may be the computers to best meet students needs since they

can be used in class to take notes more easily and less intrusive than using a keyboard. A key issue is battery life. Students in class and attendees at conferences would like to be able to go a whole day without having to recharge the battery.

*Multimedia creation*, including video and video editing. There is an increased emphasis on video for classroom use. Video is also being provided over the web – for marketing purposes (e.g. college recruitment videos), for online instruction, and for training.

*Electronic classrooms*. Increasingly, classrooms are being fitted with permanent data projection equipment, VCRs, DVD players, speakers, network connections and a computer or a place to plug in a notebook computer. New classrooms are being constructed as electronic classrooms, while older classrooms are being retrofitted with electronic capabilities.

*Online learning*. Even at residential colleges where there are no totally online courses or programs offered, there is an increased use of online components. These components supplement or complement in-class lectures. The popularity of Course Management Systems is providing instructors with new tools that make it easier to integrate the use of technology. These systems facilitate the use of course discussion lists, collaborative student work, the use of multimedia materials outside of classroom time, and submission and collection of “papers” and assignments electronically.

*Security issues*. Much time is being spent by IT staff at most small schools in dealing with security issues, including viruses, spyware, denial-of-service attacks, and malicious hacking and break-ins. A recent informal survey of several liberal arts colleges estimates that 10-20 percent of IT resources (including staff time) is spent on these and related issues. With a growing dependence on the Internet and the web, it is unlikely that these issues will go away in the near future. This provides a challenge for institutions of higher education that seek to provide an open environment in which to encourage discovery and learning.

In addition to the threats posed, there are Federal regulations that make it mandatory for institutions to follow safe practices in key areas. FERPA, HIPAA, and the Gramm-Leach-Bliley (GLB) Act all require policies with respect to how information is collected, disseminated, and discarded.

*Staffing and the increased use of “Student Technology Assistants (STAs).”* With demands outpacing increases in staff sizes, STAs are used to supplement an institution’s fulltime IT staff. In addition to providing valuable help, this also gives the students the benefit of valuable experience to draw upon when they graduate. STAs do not come without costs, and one of the biggest is in managing student workers. Someone must manage and schedule these workers who can usually only work short shifts for a limited number of hours per week, and they “disappear” at regular times during the year (semester breaks, vacations, etc.).

*Online library resources*. In a little over ten years, the web has caused a revolution in thinking about libraries. On one hand, it has provided unparalleled access to materials from all over the world. It has allowed small libraries to have access to a tremendous amount of journals that before would have been impossible. On the other hand, it has caused many to speculate that the days of print materials are numbered. However, in reality, good libraries are still measured by

their overall holdings, both in quality and quantity. There is an excellent discussion of this in chapters 9 (“Once and Future Library”) and 10 (“In the Stacks”) of Nicholas A. Basbanes’ *Patience and Fortitude*. There is a balance that needs to be made between print materials and online resources. One issue of concern is in the area of access to online journals. When these materials were purchased in paper form, the institution owned the print material for life. However, in the case of some online subscriptions this is not true. An institution may only have access (even to previous issues) as long as the subscription is purchased (“licensed” is the commonly used term for this arrangement).

With the growth in online subscriptions and access we are faced with the reality that a growing amount of our library’s resources are not housed on campus. While access to these library resources is not restricted to hours when the physical library is open, a network interruption means that part of the library becomes inaccessible. The network has become the gateway to many of the library resources.

*Training and online training.* Technology is constantly changing, and with this change comes the need for individuals to be trained and re-trained. In fact, it is in reality a continuity of training rather than a series of discrete sessions or classes. Most students are already acclimated to this, and they just accept it. New staff, faculty and administrators at small colleges are increasingly being provided with “technology orientation” training, an introduction to what is available at the college as well as opportunities for training on specific programs. Online training resources can be licensed and then be made available online for faculty, staff, and students. The institution picks the courses that it wants to license from a long list of courses, ranging from elementary to advanced. Given the typical shortage of training staff, small colleges have used these tools to provide courses for professional development for IT staff and student workers, as well as for more basic topics for the user community.

*The “webification” of everything.* In the 1980s, people involved in technology were hoping that there would be a convergence of technology – in particular that there would emerge a common interface that would be available to access information. This common interface has emerged, and it is that of the browser and the access it provides to material on web pages. Access to everything is being driven by web access. Not only is it an almost universal interface, but it also provides a ubiquitous access. “Access anywhere, anytime” has become the achievable goal.

*Linux.* A main attraction of Linux and related products is that it is developed and made available through the “Open Source” movement, developed by volunteers and made available to the public at no cost. Support for these products comes from those in the open source community or it can be purchased from companies. Linux provides an attractive alternative to commercial UNIX products. It is especially attractive to consider in those situations where UNIX systems have been used. Its current weakness is in the desktop. It has not yet penetrated much of the Microsoft Windows desktop market (usually running Microsoft Office products, such as Word, Excel, PowerPoint, etc.). In today’s world, graduates will be much more likely to see and use Microsoft Windows and related products when they graduate. Linux servers are being used or considered for use as replacements for UNIX servers.

*Windows servers.* Servers running the Windows operating system are becoming serious contenders for a multitude of tasks, from small systems running single-task applications to those running enterprise applications (such as the institution's ERP system).

*Thin-client devices.* These devices, typified by having no hard-disk storage, are usually much less expensive than personal computers (up to half the cost of a personal computer). They do require a computer monitor. In addition to being less expensive, another advantage is that they have no moving parts (no hard disk) so they are less likely to break down. All storage of documents is done on a remote server (which is backed up regularly), and software is run from the server. Since software is run from the server, there is less maintenance needed to upgrade or restore software. At many small colleges, thin clients have been extremely successful in administrative offices and many schools are either already using them or reviewing them for use in computer labs. Since they require access to a server, they require robust and fast network access.

The above represent issues and technologies with which the small college is confronted. These technologies need to be watched. Many will prove to be here for the long-haul. All will evolve, and some may disappear to be replaced by other "next new things." Other issues and technologies on the radar screen are: electronic portfolios, web portals, document imaging and new technologies for storing mass amounts of data.

Underlying the increase in all of these technologies on the typical small college campus is the issue of funding and budget. Small colleges typically have far less flexibility for IT purchases and maintenances, not to mention staffing, than a larger institution does. Nevertheless, many of the needs are the same. As new technologies come along, they need to be evaluated and appropriated when they make sense for an institution. Small colleges, especially, cannot afford to spend scarce resources on technologies that may prove to be only a passing fad. However, there is a time when it becomes apparent that a certain technology can be used to contribute to the mission of the institution. There are also technologies that must be adopted if the institution is to be competitive in attracting and keeping quality students and faculty. Tracking and adoption of new technologies needs to be an ongoing process. It also needs to be a permanent part of any information technology planning process. This requires individuals with vision combined with a good dose of common sense. It also requires a clear focus on the goals and mission of the institution. Technologies must never be purchased just because they are the "next new thing." It is always in the context of meeting a need or solving a "business" problem for which we choose to deploy any technology. It is the IT leader to best match the needs of the institution with the technology.

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