Technology: To serve rather than lead

Authors: Robert R. Newton, Conference New Technology and Higher Education 1987 : Orlando, Fla.)

Volume 24

Proceedings of

Sixth Annual Conference New Technology and Higher Education: Acquisition, Integration, and Utilization

February 16–17, 1987
Orlando, Florida

national
iSSUES
in HiGHER
EDUCATiON
Kansas State University

TECHNOLOGY: TO SERVE RATHER THAN LEAD

by
Robert R. Newton
Boston College

The spread of technology throughout college environments is occurring so rapidly that academic administrators and faculty can easily be drawn into the pursuit of both more and increasingly sophisticated technology without an explicit understanding of the impact of this technology on their college's educational mission. Those responsible for technological development often operate according to a logic and on premises that are derived from the technology itself rather than from the distinctive aims of the college.

The important question is not whether technology will be adopted in college environments, but a) whether technology, by facilitating and enhancing research, instruction and administration in colleges, will begin increasingly to control and set the direction of higher education; or b) whether, conversely, colleges will control and adapt technology in order to reassert their distinctiveness and to pursue their traditional goals with new vigor and intensity.

A fundamental assumption of any college's planning for the integration of the new technologies is that technology should serve rather than lead and that planning for technology should be guided by the fundamental mission of the college. Colleges should not drift into decisions that are based on what is technologically possible or fashionable or on what is consistent with the progressive growth of the information technology division within the college. Technological development should be explicitly subordinate to educational purpose.

Tension between the unregulated growth of technology and a college's traditional mission can emerge in a variety of forms.

the impact of technology on the relative emphasis placed on research and on teaching: will a disproportionate share of resources for technology be dedicated to the research and publication interests of faculty--to the detriment or deemphasis of teaching?

the impact of technology on the intellectual and personal interaction of students and faculty: will technology be applied in ways that promote or discourage faculty/student contact?

the impact of technology in creating new administrative structures and procedures: will technology complicate or simplify pursuit of directly academic goals?

the impact of technology on communication between the academic core of the college and the surrounding support services: will technological solutions be designed to reduce rather than increase barriers to communication between administrative and academic offices?

the organizational structure and values of units that provide technology and technological services: will these units be organized to place primacy on service, responsiveness and adaptation rather than on standardization, consistency and centralizaton?

the competition for scarce resources between the new technologies and the traditional technologies (more faculty, higher stipends for graduate students, etc.): will decisions for new technological equipment and services be made after comparing their anticipated educational impact with the impact of the same resources devoted to traditional technologies?

Each of these issues is addressed briefly in the following discussion.

Balance Between Teaching and Research

The need for sophisticated and well supported computing resources for research, especially in the sciences and social sciences, is obvious. The use of such resources for research in the humanities, whether for computerized bibliographic searches, sophisticated file systems, word processing and electronic facilitation of publication, etc., becomes more apparent year after year. Research and its dissemination in every discipline has and will continue to be enhanced by technology.

Technology's obvious facilitation of the research interests and ambitions of faculty can pose the danger that faculty energies will be drawn from teaching even more than they presently are. The application of new technologies to teaching and learning are less developed and certain than applications to research. In planning for the development of technology, the enhancement of research may completely overshadow the less clear, less visible, less rewarded application of technology to improve instruction. Thus, resources may follow the path of least resistance into an ever growing commitment to research. A college seriously committed to enhancing teaching and learning through technology will likely have to intervene deliberately and insist that a determined portion of its resources for technology be dedicated to the discovery and support of the instructional implications of technology.

Planning of resources to facilitate teaching must recognize that

teaching is an idiosyncratic function. Consequently, the college's strategy should emphasize solutions or opportunities that allow individual faculty members to adapt existing technologies to his or her distinctive aims and style.

Intellectual and Personal Contact Among Students and Faculty

The development of technology should promote rather than discourage the intellectual and personal contact of faculty and students. The release of both students and faculty from the drudgery of many routine academic tasks should provide added leisure for student and faculty interaction. But that technology may actually reduce faculty availability to students, especially if a faculty member's computer facilities are not located in his or her campus office. Remote telephone communication obviates the need for faculty to be on campus for tasks like statistical analysis or word processing. Dial-in access to online library catalogs and databases further diminishes the need for physical presence. Reduced faculty presence will affect not only contact with students but also interaction with colleagues. In allocating resources for computing, an emphasis should be placed on providing an attractive and well equipped office workstation for faculty on campus. Not to do so would encourage faculty to work off campus, and, in the process, significantly alter the campus environment.

Technology provides another avenue to increase faculty and student interaction. In the past, the almost exclusive forums for interaction were class meetings and advisement sessions. Previous technologies lacked the sophistication and power to simulate interaction between the instructor and the student. The failure of instructional television is witness to this deficiency. Programmed texts were a primitive attempt to provide individualized instruction to students as they worked their way through sequential learning experiences. The new technologies can transcend the passive limits of previous instructional technologies and can simulate the presence and guidance of a teacher to individual students as they learn. Thus, carefully constructed interactive learning designs can become the modern vehicle to intensify teacher concern for and interaction with individual students. The expense of interactive technology hardware and software will obviously be substantial.

As the interactive nature of technology has the capacity to promote greater faculty/student involvement, so also it has the potential for increasing the level of self-activity among students. A commonplace among educational theorists is the conviction that students learn through activity and through trial and error. The role of the teacher is to stimulate active learning. In this endeavor, technology is beginning to offer a wide variety of opportunities through the instructional use of computers, videodisks, etc. that demand student reaction and activity. Well designed instructional programs can provide the flexibility, the one-on-one direction, the

insistence on response and immediate reaction that are impossible in the typical classroom.

Technology's Impact on Administrative Structures and Procedures

Both the daily management of colleges as well as their short range and long range planning efforts have become increasingly dependent on the use of technology, a dependence that will grow in coming years. As colleges, in pursuit of greater efficiency and effectiveness, consider more complex, computer-driven management systems, considerable care must be taken to choose systems that can be adapted to an organization whose principal purpose is education. The internal logic of managerial and financial systems must remain subordinate and in service to the academic mission of the college. Complexity and specialization must be managed in ways that promote understanding of institutional policies and procedures and reduce the time diverted from explicitly educational functions. The role of technology should be to simplify rather than complicate, to facilitate direct rather than multi-layered solutions to academic administrative problems.

Enhanced Communication

The power of technology to speed and facilitiate communication within the campus should be used to promote greater integration between administrative and academic spheres. Academic computing and administrative computing have often developed along parallel but incompatible lines. As computing facilities proliferate in both spheres, the opportunity for their use in enhancing communication becomes more obvious and important.

A criterion for the development of campuswide communication networks as well as the design of office automation and decision support systems should be the degree to which such solutions both permit and encourage easy interchange between the collegial and bureaucratic segments of the college. In an era of increasing complexity, greater specialization and growing barriers to understanding and integration, the power of technology should be used to draw together rather than separate further the academic and administrative.

Organization and Values of Information Technology Support Units

An important issue in the development of an information technology support unit in a college is the difference in perspective and values between the information technology personnel and the faculty. Academics stress independence, diversity and minimal structure and procedures. Faculty members resemble individual entrepreneurs, loosely joined in the same organization and pursuing the same, rather general mission in highly idiosyncratic ways. The differentiation

among faculty members is low; colleagueship among equals is one of the more important values.

Information technology service units, on the other hand, in the pursuit of dependable and consistent services, tend to create a more formal, rationally organized and hierarchical structure. Lines of authority are clear, and differentiation of roles is complex and precise. Uniformity, standardization and centralization are valued.

Faculty expect a service adapted to their highly individual needs; information technology seeks to reduce diversity to manageable proportions in order to serve the largest possible number. The emphasis on standardization, consistency, tight organization and centralization can appear self-serving to faculty seeking service, responsiveness and adaptation.

Competition for Resources

The seemingly insatiable appetite of existing and rapidly emerging technologies for organizational resources causes considerable concern on many campuses. The demands for increased expenditures to improve the effectiveness of technological support services should be weighed against the more direct application of these same resources to specifically academic endeavors. Even within the academic sphere, there should be careful evaluation of the benefits to be achieved by devotion of resources to increasingly expensive technology and to the personnel needed to support full use of such technology vis-a-vis the good to be achieved by using these same resources for traditional academic improvements, e.g., additional faculty, better salaries for part-time faculty, better student and faculty academic facilities.

The issue will not always be either/or, but a question of the point at which further investment in technology and support services is a less effective means to pursue the objectives of the college than the same funding devoted to traditional resources. Given the rich possibilities available through technology and its corresponding demand for resources, the critical decisions concerning technology in the foreseeable future, rather than demanding primarily technical expertise, will require a thorough understanding of the distinctive nature of the college. The question will be how to balance and integrate the opportunities available through technology with the equally pressing demands for additional traditional resources.

In setting directions, it seems essential that the major decisions concerning technology not be the exclusive domain of the technical experts. Responsible academic administrators should be deeply involved in such decisions, and constantly alert both to the educational implications of the technology being proposed as well as the alternative use of these resources for traditional academic improvements.

Summary Conclusion

The major premise of this paper has been the importance of subordinating technological development to the distinctive educational objectives and mission of a college. College administrators are often caught up in rapid technological development and persuaded by their technological experts of the need to devote increasing attention and resources to technology. These major decisions are often made without an explicit awareness of the relationship of these developments or expenditures to the educational mission of the college. The proposed advantages of these developments may not be reviewed by key academic administrators nor weighed against traditional improvements in the competition for scarce resources.

Likely areas of tension between technology and the mission of a typical college have been described:

the proportional emphasis on teaching and research,

the intellectual and personal interaction of students and faculty,

the creation of new administrative structures and procedures,

the communication between academic and administrative spheres,

the organizational structure and values of the information technology division, and

the competition between new technologies and traditional technologies for scarce resources.

The purpose here has not been to denigrate the important and even critical impact technology will have on higher education. Rather, the aim has been to argue that this impact will be more effective and balanced if it is explicitly related to and directed by the educational mission and objectives of the college.