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The Information Technology Imperative for Higher Education

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Against the Grain

"Linking Publishers, Vendors and Librarians"

The Information Technology Imperative For Higher Education

*Comments Made At 16th Annual Charleston Conference,
Charleston, South Carolina, November 7, 1996*

by **William T. Snyder** (Chancellor, The University of Tennessee, Knoxville)

dent, self directed learners." Information technologies in higher education will be central to students becoming independent, self directed, life long learners.

A major challenge facing higher education is to help its constituents

It has become almost a cliché to say that we live in an information society. The late **Ernest Boyer** said in his book *College: The Undergraduate Experience in America*: "At a college of quality, there is a wide range of learning resources that enrich and extend classroom instruction and encourage students to become independent, self directed learners."

become information literate. This means acquiring the ability to recognize when information is needed and be able to locate, evaluate and effectively use the needed information. Information leading to knowledge and wisdom is empowering and ennobling for the human mind and spirit.

The library of a university has been traditionally the nerve center of sources of information needed by its various constituents. Access to information in the university is no longer constrained by physical location. Information technologies have enhanced access to information without regard to physical location. The evolution of libraries on university campuses has been a continuous struggle of acquiring adequate financial and physical resources. I think of the historical challenge of developing our library system at The University of Tennessee, Knoxville

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If Rumors Were Horses

A lot's been going on. I guess the holiday season came early for some of us! First, **Yankee Book Peddler, Inc.** (YBP) announced November 6 (at the beginning of the **Charleston Conference** no less!) that it will open a branch in the UK which will begin operating from offices in Southampton, England, in early 1997. YBP intends to hire experienced UK residents for management, sales, operations, bibliographic

and general staff positions. The UK branch (CIO and project executive for YBP's UK branch is the incredibly competent **Gary Shirk**) will offer the same range of services now offered by YBP in the US. **John Secor** — the incredibly incredible, if you ask me — CEO at YBP, has said, "Opening our office in the UK is the culmination of a decade-long strategy to position YBP globally. We're pleased to be able to offer the works of two countries through a single system." As a result of the decision to open its own office in the UK, YBP will be ending its year-long relationship with **W H Everett and Son Ltd** of London. YBP had been considering various means of technology sharing and development with Everetts, but concluded that such a course was not feasible in light of strategic differences between the companies. YBP will be working with Everetts to frame

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as being like the challenge we face in deploying information technologies on our campus with one major difference. The time line for deploying information technologies is much shorter than the glacial like time frame during which our library system evolved. Universities that cannot make adequate progress in this compressed time frame in enhancing information technologies on their campuses will experience a serious competitive disadvantage. The imperative of enhancing information technologies on our campuses is symbolized by the email note I received from a freshman complaining because he could not access the Internet from his dormitory room. This student and others like him will have more options of going to those universities where their expectations of access to information technologies can be met.

Information technology has radically changed the environment of information access and utilization. The computer has had as great an impact on access to information as did the invention of the printing press. The role of those individuals over the history of mankind who have been the gatekeepers of information such as the prophets, the priests, and teachers has been dramatically changed. We in higher education must rethink the role of the teacher in the context of information technology. It has been said that the role of the teacher will change from being the **sage on the stage** to the **guide on the side**. This means that our students will be less dependent on us as teachers as the primary gatekeepers of information. Rethinking this new role of the teacher is frightening and threatening to some.

One of the challenges of the information age is the overabundance of information. We are all unwilling victims of information overkill. Information is certainly not a scarce resource. We are bombarded by information through the electronic and print media. My daily mail is separated by my secretary into two folders, the blue folder and the yellow folder. The yellow folder contains what my secretary judges to be important which requires a response from me. The mail in the blue folder is considered to be FYI (for your information) mail, most of it unsolicited. The blue folder is always thicker than the yellow folder. Information technology has the potential to better manage the blue folders and the yellow folders by allowing us to find the information we need and want when we want it.

I suggest that the relationship between information technologies and the 21st century university must consider the following nine issues.

1. Understanding the general issues facing higher education

The National Commission on Excellence in Education published in 1983 a report entitled *A Nation At Risk* which was followed over the next decade by more than 25 national reports addressing the "crisis" in higher education. Some of the characterizations of the "crisis" included the need for accountability, the imbalance between research and teaching undergraduates, the excessive disciplinary specialization, the lack of vision among higher education leadership, and inadequate attention to the escalating costs of higher education.

The challenges facing higher education include inadequate resources of money, facilities, people; increasing competition for students, faculty, staff; achieving and maintaining target school status with business and industry; increasing expectation for accountability from the public in general and state government in particular; greater sensitivity to fulfilling the needs and expectations of our many constituent groups; the need for increased teamwork and institutional commitment in harmony with individual and aca-

demical discipline needs; continuing emphasis on leadership development; recognition of the human resource as the only resource with the potential for appreciating in value over time.

2. Articulation of institutional mission

Having a concise institutional mission statement is essential as a context for assessing the validity of proposed institutional changes relative to information technology. A mission statement must be concise; easily committed to memory; be motivating; capture the essence of higher education as being the development of the human resource; and creating, preserving, integrating, synthesizing, transmitting, and applying knowledge. We have attempted to capture these attributes of a mission statement at UTK with the following statement.

UTK is committed to the development of individuals and thus society as a whole through the cultivation and enrichment of the human mind and spirit. Our mission is accomplished through teaching, scholarship, artistic creation, outreach, and professional practice.

3. Knowing the constituents to be served and their needs

I use the term *serve* very deliberately because I believe that the philosophical basis of the university and its information infrastructure should be that of serving the needs of various constituents. Knowing who those constituents are and their needs is essential. Universities have a variety of constituents both internal and external to the institution, and their needs and expectations sometimes conflict. Internal constituents are obviously students, faculty, administrative staff. External constituents include alumni, donors, prospective employers of graduates, governing boards, elected officials who influence funding of those institutions that are publicly assisted, and the local community.

4. Promoting critical thinking and wisdom as the central goal of education

In the early part of the 20th century long before the age of computers, T.S. Eliot posed in one of his poems the questions;

*Where is the life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?*

In higher education, we frequently succumb to the easier task of focusing on teaching rather than learning, focusing on data and information rather than the more difficult and central goal of promoting critical thinking and wisdom. In their book entitled *The Monster Under the Bed*, Davis and Botkin describe with clarity the four-step progression from data to information to knowledge to critical thinking and wisdom. They say that *data are ways of expressing things; information is the arrangement of data into meaningful patterns; knowledge is the application and productive use of*

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information; critical thinking and wisdom are the discerning uses of knowledge.

Information technologies will greatly facilitate the management of data, information, knowledge to promote critical thinking and wisdom in our students. The standard dictionary definition of wisdom is a good description of the goal of higher education.

Wisdom: ... the ability to judge soundly and deal sagaciously with facts, especially as they relate to life and conduct; knowledge, with the capacity to make use of it; perception of the best ends and the best means; discernment and judgment...

5. Deciding what information and computing services are to be provided

The information and computing services provided by a university obviously vary with each constituent group, but they can be categorized as calculational, research, teaching/learning, administrative, and outreach. There is clearly overlap amongst these five categories, but this identification of categories helps focus on the types of technology needed.

6. Paying for the services

For publicly assisted universities and possibly for private universities as well, the only alternative I see for generating the revenue stream necessary to deliver information technologies in higher education is to tax the students. For this to be a viable alternative, it will be essential to demonstrate direct benefits to the students.

At UTK, we received approval from the Board of Trustees last month for a student technology fee. The fee, which is \$12 per credit hour to a maximum of \$100 per semester, will generate an annual revenue stream of approximately \$5 million totally dedicated to enhancing the information infrastructure. This revenue will be used to complete the networking of the campus, to enhance public and departmental computer laboratories, to make available software to students, to provide student support services, and to provide for an instructional technology facility.

7. Assessing trends in technology

I see two broad trends in technology as essential to the deployment of information technologies. One trend is the complete networking of the campus which means providing access to every office, laboratory, and residence hall room as well as access for off campus students. Scott McNealy of Sun Microsystems said that the network is the computer of the future.

The second trend will be migration toward a networked, distributed computing environment. There are two principal reasons for embracing the distributed computing environment. First, in order to

be competitive in recruiting students and faculty, universities must have networked computing facilities on which the latest developments in hardware and software can be implemented quickly in an environment of rapid technological change. Secondly, there is compelling evidence that for many applications the cost per unit measure of computing power is less with distributed computing than with mainframe based facilities in data center configurations.

8. Developing the infrastructure for delivering services

At UTK we are committed to an information infrastructure and support organization that is customer oriented, proactive, and team based: an infrastructure capable of capitalizing on change and flexible enough to be, itself, changed when necessary. Effective design, deployment, and use of information technology is central to the

creation and sharing of knowledge, the enrichment of the educational experience, the conduct of administrative processes, and the facilitation of communication. The required information infrastructure must accommodate the unique needs of teaching and learning, research, administrative services, and outreach.

"For publicly assisted universities and possibly for private universities as well, the only alternative I see for generating the revenue stream necessary to deliver information technologies in higher education is to tax the students."

9. The three Cs of Cultural Change Challenge

In conclusion, I submit that the greatest challenge facing the 21st century university in dealing with information technologies is not a challenge of technology nor even a challenge of resources but the challenge of institutional cultural change. The phenomenon of change is perhaps the most common denominator of contemporary life. The media recount on a daily basis changes in governments, institutions, the impact of technology such as information technologies on the lives of individuals. Much of the change impacting individuals is driven by circumstances seemingly beyond their control. Coping with change which is not easily controlled or managed at the individual level leads to high stress and anxiety in contemporary life. The impact of change which is not initiated by individuals themselves is captured in the French proverb, *When it comes to changes, people like only those they make themselves.*

Although the impact of change is not yet totally grasped by many university faculty and administrators, higher education in the United States has seen the tip of the iceberg of change which looms menacingly under the surface of academic waters where ripples on the surface are easily recognizable but the emerging large waves of change sometimes go undetected. There is still a great deal of denial in academia about the inevitability of change from the impact of information technologies. I suggest that we must adopt a new paradigm of change. **Chuck Nielsen**, Vice President for Human Resources at Texas Instruments, a corporation which has undergone enormous change for survival as a company, suggested that our paradigm of change must shift from **Change is a threat to security** to **There can be no security without change**. I believe that these are words worth heeding for the journey of linking information technologies and the 21st century university. 🌱

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networking, networked information, and library technology journals. He also served on the Council of the American Library Association. He is survived by his wife Rosemarie Kozdron, his parents Austin and Mary Peters, and a brother Philip Peters. CNI Steering Committee Chair Richard West expressed his sentiments: "We do not yet comprehend how much Paul will be missed. His leadership,

insight, and quiet competence has had an impact on all who have benefited from the CNI program. The many who had the chance to work with Paul know of his contribution and influence on our professional, scholarly, and technological activities — I cannot imagine his contribution being replaced any time soon. For me, this is also a great personal loss, for Paul was a trusted colleague and a close and wonderful friend." A condolence book will be available on the CNI website www.cni.org. 🌱