

A New Role

Computer-based technology has transformed higher education: the core research agenda and methodologies of the large majority of the sciences; the empirical modeling and scholarly output of disciplines such as economics, psychology, sociology, geography, and political science; the databases and repositories, and thus the “status,” of business schools; the complex administrative institutional operations; and technology transfer and the commercialization of intellectual property. If there is still any debate over the extent of this transformation, it concerns only two segments of higher education.

The first area that has not yet felt the full effect of technology is electronic services. It will be another three to five years before colleges and universities commonly provide integrated self-service offerings based on convenience, flexibility, and personal customization for staff, faculty, alumni, and of course students. However, the topic I want to discuss is the second area: teaching and the role of faculty in colleges and universities. With a handful of exceptions, the marginal added value afforded by technology in the teaching arena has been a fundamental disappointment. Yes, some faculty members are resistant, some are stubborn, and some are counter-revolutionary. But the truth is that technology itself and those of us who represent the corporate and institutional agents of change in the teaching environment have thus far failed. Across the United States today, teaching-related technology investments on campuses are at risk, and many technology champions are in retreat. Until technology becomes a

core part of the teaching environment, it will not be seen as truly strategic. Until technology solutions are internalized within the teaching practice, recurring investment in technology will be seen as less than necessary.

What do we need to do to reach this point? First, higher education must move technology beyond the nineteenth- and twentieth-century paradigm of text-based education. E-mail, threaded conversations, chat rooms, and “containers” for depositing electronic essays are simply extensions—very poor extensions—of very old communication protocols. The science of how people learn and the relationships between the mind, experience, and formal education are clearer than ever before. The National Research Council, among others, notes that new technology-based learning is consistent with the thrust toward multi-sensory, interactive, and experiential learning, all of which are important elements in deeper-order learning, understanding, and knowledge.¹ Second, and beyond the shift to multisensory learning, colleges and universities must assume a new role—a leadership role—in advancing the work, already started, in five key areas:

1. Six years ago, higher education initiated a bold effort to deliver thousands of hours of rich teaching content by offering full-screen and full-motion video over the Internet. At the time, the technology community was highly skeptical about delivering video over data networks. Today, this is part of the hype of “technology transforming teaching.” The truth is, however, that we are barely ahead of where we were

six years ago. This represents a lack of vision on the part of the technology firms and a collective inability of higher education institutions to drive a teaching-centered technology solution to the major technology vendors. When networking and computer companies say that there is no market for this solution, campuses respond by continuing to spend up to \$20,000 every three to four years—and by continuing to justify this expense—for hardware, software, and technical support in order to send e-mail, read the *New York Times* online, word-process, and look up information in address books.

2. Five years ago, higher education began to support an intensive effort to infuse Geographical Information Systems (GIS) “logics” and visualization tools throughout the curriculum—from business to poverty studies, from English to biology, from biomedical engineering to law. Since then, there have been relatively few breakthroughs. Colleges and universities have been almost invisible at the table as companies look to define markets and to research and develop opportunities. Personal visualization (i.e., seeing the world and its countless data points, narratives, and aesthetics through visualization) is the future of this type of technology and will transform the experience of discovery, exploration, and socialization—the key elements of teaching.
3. Four years ago, higher education started experimenting with desktop video-conferencing. Body language, facial expression, collaboration, co-



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leges and universities have spent most of these past two years complaining about the unwillingness of student information systems vendors to open up their APIs (application programming interfaces), about the poor quality of the underlying code of course management systems, and on and on. The portal environment will transform the student experience on campus. Campuses must not wait for the vendor community.

The next generation of technology products and services for teaching will continue to be disappointing and of only marginal value until new, intermediating relationships are established between college/university leaders, technologists, publishers, infrastructure players, hardware and software vendors, faculty, and students. Higher education institutions are managing the use of technology in teaching rather than providing technology leadership.

If they fail to seize the opportunity to take a leadership role in redefining these new relationships and in advancing the technological work currently under way in the teaching environment, colleges and universities will place themselves at further risk, will alienate their students, and will lessen the value of higher education to society as a whole.

Note

1. John D. Bransford, Ann L. Brown, and Rodney R. Cocking, eds., *How People Learn: Brain, Mind, Experience, and School*, National Research Council (Washington, D.C.: National Academy Press, 1999).

operation, fear, passion, thrill, disappointment, confusion, elation—these emotions, all part of the teaching experience, have been dismissed as not being possible with the current technology. Nonsense. Colleges and universities must identify leadership that will direct innovators, entrepreneurs, venture capitalists, and marketers to create the products that will make a difference. Today, both the \$50,000 conferencing facilities and the required “distance-learning” labs on campuses can be transformed by \$500 desktop-video tools. Higher education needs to drive the relevance of these tools in the marketplace to meet its needs.

4. Three years ago, higher education began working in wireless. Back then, the mavens in education said that the throughput was too little. Today, the

issue is said to be security concerns. But the real reason that campuses have not been part of the standards committee processes and the research and development work in this area is lack of imagination and leadership. Many information technology departments view wireless technology as a disruptive technology. Thus colleges and universities are limiting the implementation of wireless because “students are surfing the Web instead of listening to the lecture.” Excuse me? What theory of learning are we working from?

5. Two years ago, higher education started investigating portal technology and began infusing wireless, streaming video, and desktop video services into the customized interface that portal technology makes possible. But instead of demanding and directing the development of portal technology, col-

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