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ABSTRACT

Technology by its nature has and will continue to reshape higher education. Market forces have created new pressures and new opportunities for higher education to integrate technology into their missions and practices. Interactive technology reduces the power of institutions to define the parameters of knowledge and learning. This essay addresses ways to preserve a broader social conception of learning in a world where markets and technology are combining to reshape higher education. The availability of a new medium yields an expanded range of educational providers. Traditional students should be addressed as consumers who have choice in the educational market. Successful institutions will effectively navigate the tension between gown and badge while retaining their core missions and values. Institutions must devise strategies to remain engaged with a changing educational market, and willingly seek out the new learning tools technology makes available. Faculty members should look at learning processes and apply those lessons to their own teaching in order to best provide effective educational experiences to students. Electronic learning tools, including Web-based programs of instruction, can help institutions become more effective and more accountable. (HB)

P O L I C Y

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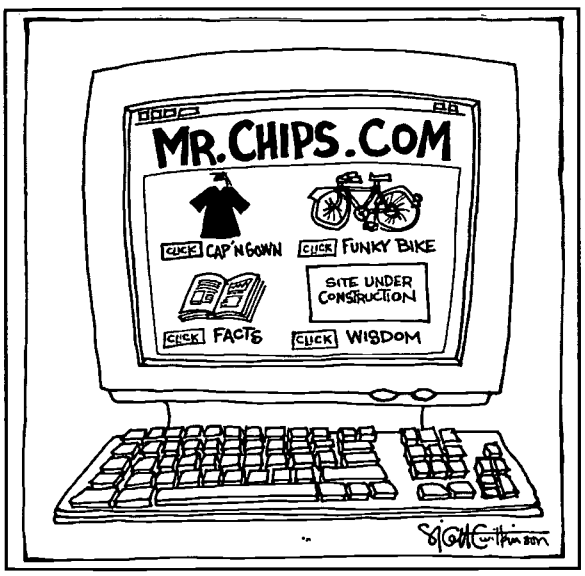
The Mission and the Medium



Successful icons are those that persist in the mind's eye. Among the educated and curious, there has been no more enduring icon than the yellow borders of *National Geographic*—magazine, treasure trove, uniquely American celebration of wonder and inquisitiveness. For generations *National Geographic* was the American collectable: source material for countless term papers, invitation to exotic travel, an integral part of the furnishing of millions of American coffee tables, bookcases, basements, and attics.

Today, all that is changing. Like every other American icon, *National Geographic*, along with its publisher, The National Geographic Society, is in the process of reinventing itself. It too is becoming a dot-com, spurred by the fickleness of the market, the surge of technology, and the creative energies of its staff. Visitors to nationalgeographic.com now encounter a rich feast of new delights: interactive pictures, maps, invitations to travel as well as explore, notices of what will appear next in the magazine and on television, and—a sure sign that the Society has not forgotten its young learners—a search engine that promises what erstwhile term-paper writers might have wished for in their own school days.

The National Geographic Society launched its website in 1996 to deliver the kind of engagement in learning that a printed magazine alone could not provide. In doing so, it embarked on a journey for which there were only rudimentary maps. Here was a territory where users were presented with options to experience materials in sequences of their own choosing and to provide immediate feedback in the form of e-mail. Even the presentation of older material took on expanded dimensions; now there was a sense of movement as well as color in the photographs, juxtaposed with passages of original text. The familiar icon itself was tugged and stretched, lending its yellow borders to new shapes and purposes. Every element pointed to the fact that what had formerly been termed a "readership" was now transformed into something else—part audience, part engaged client, part itchy surfer all too ready to abandon the site in search of something more immediately rewarding.

While the analogy is not exact, The National Geographic Society's experiments with technology offer an important insight into what the future likely holds for colleges and universities in an educational environment increasingly defined by technological opportunities and market competition. The force of emerging markets, spurred and enhanced by technology, has already created new contexts for learning and new competitors in pursuit of higher education's traditional students. At the same time, technology, precisely because it empowers the end-user, has strengthened most students' sense of themselves as consumers with a range of educational choices.

In a variety of contexts and in some surprisingly inventive ways, technology is forcing institutions of every stripe to address fundamental questions of who and what they are—and of how to achieve their educational purposes in a world of expanded consumer

choice. Many of the familiar, even perennial, questions have taken on a heightened sense of urgency: As higher education institutions, what service do we provide? How do we know we have provided it? What is the best way to do so? More particularly, will the embrace of electronic technology in the current age transform us into something we never intended? Will the education and research mission become just another noble cause set adrift in a market that has turned ugly as well as fickle?

These are also the questions that came to dominate the national roundtable we convened to consider the pairing of learning and technology in higher education. The core of the roundtable was drawn from teams, for the most part led by their presidents, from five liberal arts colleges that had participated in a special Knight Collaborative engagement focusing on electronic alumni networks. Although they had joined the engagement to explore how technology might provide ways for their alumni to be more involved in the academic life of campus, these colleges soon came to understand that any successful interaction with alumni at this level would require some consideration of how learning occurs in an electronic medium. From there it was a short step to a broader set of questions linking higher education's traditional aspirations, the capacities of technology to recast established relationships, and the power of the market to reshape most if not all would-be providers. Given the direction this particular engagement had taken, it became obvious that a national roundtable on learning and technology also required a hefty mix of for-profit providers, including veterans of The National Geographic Society's technology ventures, who themselves had made the merging of technology and learning a core part of their businesses.

Thus constituted, what our roundtable made clear was that any discussion of technology is in fact a discussion of change—and of the opportunity as well as the anxiety it occasions. Interactive technology is intrinsically an accelerator of those societal forces—the embrace of markets, the celebration of competitiveness, the empowering of the user—that are reshaping American colleges and universities. If these forces are leading some institutions and their faculty to explore new approaches to instruction, learning, and intellectual renewal, they are causing others to turn inward and cling to the traditional and familiar. The practical issues occasioned by technology—how much to spend, how much to change, whom to empower—will sooner or later lead every college and university to revisit basic questions of mission in a world of changing educational purposes and means.

Technology is only one face of change; a second, equally powerful force is the challenge that for-profit providers of postsecondary education are creating for established colleges and universities. There is growing concern that many of higher education's customers are coming to regard two different kinds of education in essentially the same light. In this changing market environment, many institutions are finding it necessary to define anew the relationship between providing credentials for career advancement and providing a broad-based education that fosters more comprehensive learning. Universities and colleges find that students increasingly resist the notion of higher education as a set of interrelated, coherent learning experiences providing the basis for citizenship as well as individual success. While market demand for the holistic learning experience remains strong in some quarters, in others there is pressure to break the traditional academic degree into its component parts.

By its very nature, interactive technology, particularly that which connects individuals to sources of information through the Internet, reduces the power of institutions to define the parameters of knowledge and learning.

How to preserve this broader social conception of learning in a world in which technology and markets are combining to reshape higher education is ultimately the subject of this essay.

More Efficient Markets

By its very nature, interactive technology, particularly that which connects individuals to sources of information through the Internet, reduces the power of institutions to define the parameters of knowledge and learning. In some respects the strong centralized grip that the earliest universities had over learning can be understood as a function of inefficient markets for distributing knowledge. Libraries were the repositories

of texts created by scribes and made available only to those with scholarly credentials. Gutenberg's invention of moveable type in the fifteenth century provided the means for a greatly enhanced distribution of the Bible, in effect putting the power of salvation more directly into the hands of lay readers and paving the way for the Reformation. If the printing press made the process of distributing knowledge more efficient, it also created new markets by making information more widely accessible.

The Internet represents yet another step in the same direction—liberating information from the stewardship of the few and making it the property of the many. What interactive technology is on the verge of accomplishing is a fundamental broadening and reshaping of the market for learning itself. The World Wide Web offers a very democratic, unmediated realm of communication, allowing anyone to become simultaneously scholar and publisher simply by posting information on a topic of his or her choosing. The endgame of interactive technology is to connect an individual to any source of information, anywhere, anytime. In making possible this set of linkages, technology is effecting profound changes in the sense of self, in work, in social structures, in the economy—and in higher education. At every turn, technology empowers the end-user, through its search capacities, its provision of direct feedback, and its ability to accommodate associative, highly individualized paths to discovery and learning.

Both directly and indirectly, this change in medium is yielding an expanded range of educational providers. Traditional higher education thus finds itself in more direct competition with alternative and for the most part for-profit enterprises, which principally focus on providing private goods for the benefit of individuals. For-profit vendors understand that, in order to survive, they must succeed in attracting *more and different* customers to purchase the services they sell. The only criterion for continuing or discontinuing a particular educational program from this standpoint is market success.

Technology is thus helping to erode the sense of distinction in the public mind between two very different sets of learning enterprises: one broad and social, the other narrow and businesslike. At one time, most postsecondary learners did in fact perceive real differences between traditional collegiate, degree-based programs and the kind of certified training offered by corporations, professional organizations, and for-profit vendors, as well as the continuing education and extension programs of traditional providers. There were differences in style and substance, as well as in time, place, and pacing.

In many respects, higher education institutions have contributed to the erasure of these demarcations by seeking new sources of revenue. Through the 1970s and 80s, as baby-boomers completed college, institutions of every stripe began developing new programs directed to specific populations of learners—notably, programs for adults seeking to expand their professional skills. Again, it was technology that substantially enhanced the ability of institutions to explore new pedagogies and markets, just as it increased the ability of for-profit providers to lure away some of the students that traditional institutions had considered largely as their own.

However differently any given player may define "a piece of the action," everyone now wants one, from the most traditionally configured college or university to the most aggressive of the new dot-coms in search of an educational El Dorado.

These initiatives among both traditional and non-traditional providers have drawn what were once regarded as essentially separate streams into a single turbulent river. Everyone now wants a piece of the action, from the most traditionally configured college or university to the most aggressive of the new dot-coms in search of an educational El Dorado. In the world of Internet graphics, the distinction between campus and storefront has become virtually nonexistent; the homepage of a university or college differs very little from that of a for-profit vendor of educational programs and services. What matters to the consumer is flexibility, demonstrated success, and name brand—something every successful college and university is learning to burnish with care. And nothing is very certain. What's hot today is cold tomorrow, as the merging of once-separate streams creates a more singular market for postsecondary learning filled with deadfalls and whitewater.

Gown and Badge

Along with this blurring of images has come a change in language that is one more sign of confluence in postsecondary education's formerly separate markets. While the most prestigious universities and colleges may find their environment largely unchanged by the infusion of new markets and changing consumer expectations, most established institutions are finding themselves grouped together with a range of other providers of educational services. Indeed, one of the most fundamental changes in higher education is the recognition that the public is beginning to perceive colleges and universities more as vendors than as institutions.

This change in perception and language is a source of concern to many institutions because it seems to carry them away from the kind of education that, at least in the ideal, their faculty seek to provide. What most colleges and universities want to offer their students is a set of learning experiences whose value resides in their integrity and coherence as much as in their individual components. These experiences engage a student with the methods and subject matter of several fields of study through extended contact with both faculty mentors and peers. While these degree programs expect students to specialize, they offer the prospect of broader personal growth and transformation through general education, service learning programs, and, for many four-year institutions, a residential campus.

The symbolism of the traditional academic gown aptly conveys this idea of an undergraduate degree, whether baccalaureate or associate. The gown denotes a rite of passage, the culmination of a journey in which the student has met a succession of increasingly difficult challenges in more than one domain. Symbolically, as well as literally, the gown extends over the learner's entire body; it signifies the student's passage into a different stage of life—the attainment of an academic, social, and ethical milestone. Finally, the gown expresses the ability to make informed and responsible choices as citizen, worker, and human being.

The contrasting approach is one that certifies a learner's mastery of a particular set of skills. Postsecondary programs of this sort for the most part do not presume to impart a broad enhancement of the learner's social, civic, and ethical capacity. Their purpose instead is to provide a credential that can apply directly to a learner's current circumstances, qualifying him or her for promotion or career advancement. For those enrolling in programs of targeted skills, what is important is the certification of skills learned—the merit badge, stitched to one's sash as evidence of personal preparedness. Merit badge education is about singular steps and achievements, in contrast to the broad accrual associated with the gown.

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In the most general sense, both the gown and the merit badge symbolize outcomes of postsecondary learning; both certify a learner's advancement to a higher level of ability, and both convey a sense of genuine achievement. At the same time, each symbol derives from different purposes and gives rise to a different lexicon of qualities. The language of the gown centers on the development of learning capacities: verbal, numeric, problem-solving, ethical, social, civic. The terms used to describe programs conferring merit badges focus less on capacities than on the attributes of the learning program itself. Like the content of their programs, the vernacular of merit badges targets the self-defined needs of the learner-customer. Here the important terms become: skills, efficiencies, convenience, results, and just-in-time.

The tension between the orientation of the merit badge and the gown is certainly not a new phenomenon in postsecondary education. College and university faculty have often expressed dismay at students' tendency to bring a narrow utilitarian focus to their undergraduate studies. General education, however well-designed, however integral to an institution's mission and philosophy of education, registers all too often in the minds of students as simply a set of "requirements" standing between them and the attainment of the baccalaureate degree. Most colleges and universities would likely admit that the value they place on the gown—on degree attainment as a culmination of related learning experiences—far exceeds what many undergraduates account as the value of

their educational breadth and integrity. Whatever claims colleges and universities might make to a higher ideal of learning, these institutions know that they are ultimately in the business of certifying knowledge and abilities that qualify graduates for individual advancement.

Again, what is new is the capacity of interactive technology to accelerate the merging of gown and badge. As the differences between the two approaches to postsecondary education become less sharply defined, the merit badge will likely be perceived as having a transformative power approaching that of the gown. Precisely because merit badge programs target specific skills, the content of these programs lends itself more readily to electronic delivery. As more people gain access to the Internet and avail themselves of the merit badge programs likely to become the Web's stock-in-trade, higher education's consumers will exert even more pressure to redefine knowledge as the mastery of discrete pieces of information, rather than as a culmination of interlocking learning experiences. To the extent that this view gains wide societal acceptance, drawing even the most prestigious institutions into a booming market for distance learning, postsecondary education will come to be seen in increasingly reductive terms as primarily a process of credentialing.

The tension between these two conceptions of the learning experience is probably most pronounced in community colleges and in what are often called comprehensive institutions, which together teach the majority of undergraduates in the United States. These institutions work hard to convince their students, many of whom are the first generation in their families to attend college, that they need the range of experiences and achievements that constitute the educational gown. On the basis of their own observation and family experience, however, many of these students may come to believe that a set of associated merit badges will suffice to meet their largely vocational goals. It is only a small step, then, for the vendors of merit badge programs to argue that a set of such badges is tantamount to the experience of the gown—in terms of increasing practical skills and earning power, if not in the breadth of educational experience.

Winning in the Learning Business

It should surprise no one that the surge of interactive technology has imparted an increased sense of urgency to questions surrounding both learning and the market for learning services and credentials. The pace of change itself forces the question: Can an educational program conducted through electronic means instill the same quality of learning as face-to-face instruction? What components of the traditional college or university learning experience are indispensable? Or to pose the question in the very language of an enterprise: What does it take to be a winner in the learning business?

One ingredient for survival is the ability to read the market—to know what the learner wants and who else is ready to supply it. Most colleges and universities are coming to understand that maintaining vitality in this market will require a collective and individual effort to create an educated set of learners—customers who recognize and seek what a traditional baccalaureate education offers. As the president of one liberal arts college observed, "We're dead meat if we can't articulate why we think the residential learning experience matters."

Winners in the learning business will also be those who create a viable language and metric to demonstrate that learning has occurred. In its various applications, technology has given increased sharpness to the question of how one ascertains a student's mastery of knowledge and skills. The growing use of web-based programs of instruction has helped create a more intensified atmosphere of accountability for both traditional and nontraditional providers of postsecondary education.

Research has shown that most employers pay no attention whatsoever to high school transcripts, and they view a college degree primarily as a sign of a graduate's ability to set and pursue long-range goals—to work hard, complete tasks, and fulfill the requirements of a degree or a job. However heartening the news that a college degree is still considered a valuable credential, it should give institutions and their faculty some pause to think that the content of their curricula matters less to employers than the sheer fact of a graduate's completing a program. In some fields, notably computer programming and software development, "try and buy" arrangements are beginning to supersede more traditional reliance on

academic credentials as the determining factor in hiring decisions. A prospective employee may be engaged as a temp simply to test how well he or she performs in the thick of real challenges and deadlines. The results of this trying-out period matter more in the final hiring decisions than academic credentials.

This mindset inherently devalues the content of the traditional academic degree, while placing a heightened premium on the learner's ability to apply knowledge in real-life situations and, frankly, to evince basic social skills in the workplace. To the extent that alternative providers of postsecondary education succeed in producing graduates with these qualities through the Internet or other means, they will give traditional universities and colleges an increasingly competitive run for their money. But the message is clear for any and all educational providers: more than ever, demonstrable results will likely determine winners in the learning business.

Maximizing the Relevant Gain

But being a winner in the information business is not necessarily the same as successfully fostering learning. If programs of knowledge and information were measured solely by the number of people who pay attention, then commercial television would certainly emerge as the winner of the learning industry. Any institution conferring the baccalaureate or associate degree will contend that successful learning must also be considered in light of its social utility—by the extent to which instruction fosters a graduate's ability not only to fulfill personal and professional goals, but also to contribute as citizens to the well-being of society.

Technology increases both the sources of learning and the means to facilitate the learning process. If in fact learning occurs all the time, as many contend, a series of key questions arises for traditional colleges and universities: How can higher education maximize the relevant and minimize the irrelevant gain? What are the defining features of the kind of learning the nation's colleges and universities seek to foster in their students? How can colleges and universities ensure that the purposes they care about continue to have currency in the market for postsecondary learning? What role might technology play in achieving those purposes?

Successful learning, as we conceive it, entails both a cognitive and affective change; a person thinks, feels, and acts differently as a result of the learning experience. Learning, by this definition, fosters individual growth and development, enhancing an individual's capacity to think critically, clearly, and creatively; to judge and act wisely and humanely; to act

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collaboratively; and to communicate effectively. Successful learning instills a sense of responsibility beyond oneself—a desire to contribute to society as both citizen and worker, from a concern about the well-being of others as well as oneself. Guiding the design of most educational content and delivery in this conception is the principle of linking the learner's vocational motivation with a broader set of societal purposes. The challenge facing any university or college is how to sustain these values in a market that increasingly regards higher education as simply the gaining of credentials to help individuals pursue personal advancement.

These established institutions are also learning that to retain currency in this market means incorporating technology into their teaching and learning programs. For a significant number of faculty in many institutions, the introduction of technology has indeed spurred new excitement and creativity, accompanied by a sense of intellectual renewal in teaching. Our experience suggests that pedagogical conversations in the future will increasingly make technology a point of departure as well as a reference. The guiding question will be: What instructional methods will you change in light of the tools that technology makes available?

In answering this question, most colleges and universities are likely to begin by affirming their conviction that the classroom works: it creates a human dynamic that allows for the sharing and development of ideas, and it makes possible the demonstration of

learning within a social context of peers and instructor. Making the case for the classroom, however, will require more than a pious invocation of tradition. Even in a traditional college or university, technology offers an important augmentation to classroom interaction, making possible a multiplicity of connections where hitherto the principal connections have been among teacher, learner, and text. The caveat is that what an institution or an individual faculty member does not know—the developments in subject matter or application that have come about while no one at the institution was paying close attention—will likely prove costly to both purse and pride. For the unwary, adopting alternative delivery mechanisms will neither enhance learning nor reduce costs. In exploring the potential of technology to improve the quality of learning, one of higher education's challenges is to avoid multiple inventions of the same wheel. Part of any institution's effort must be to discover pedagogies and technological applications for instruction that have proven successful in particular fields and can serve as models.

A learning environment that makes thoughtful use of technology would be one in which faculty put aside the task of simply conveying rote information to students. However apparent this point may seem to those outside the academy, it is worth noting that the availability of technology in itself does not necessarily change accustomed practice. Adam Smith in *The Wealth of Nations* (1776) criticized university faculty for lecturing to students when books offered a more effective way of communicating basic information. For all that, the phenomenon of professors using class time to read aloud their published essay on a particular subject persists to the present day. Too many faculty relish the role of the lecturer while shying away from that of a mentor and guide to their students. Even the possibility of designating e-mail as a means of communicating with students creates in some a fear of being overwhelmed with questions.

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The larger truth is that an electronic environment does not diminish but rather changes the role of the faculty. The initiative taken by Rensselaer Polytechnic Institute (RPI) in the early 1990s to replace large introductory lecture courses in physics with a "studio" approach to instruction exemplifies one version of a redefined faculty role. The studio pairs students at computer workstations in an environment that stresses learning through problem solving, while the instructor serves as a resource and coach to students as they work through the material. It is an innovation that succeeded both in improving the quality of student learning and in reducing the cost of instruction (See *Exemplars*, *Policy Perspectives*, August 1997).

Learning to Swim

The reflection of higher education in the mirror of technology leads to a last, even more fundamental, question: Has digital technology created a moment of historic discontinuity, a "big bang" akin to the invention of the printing press or the transition from an oral to a written tradition? Or would a more realistic appraisal be that the widespread adoption of digital technologies is more of a shaping than a transforming event, more akin to a "big bump" in the evolution of teaching and learning?

We believe it is the potential of technology, working in conjunction with market forces and the continuing discussion of learning, that has the power to make fundamental changes in the context in which teaching and learning take place. Technology offers a means to deepen the influence that higher education institutions have on their students. Employed in thoughtful ways consistent with an institution's mission, technology opens new avenues for the enhancement of teaching and learning; it increases the accessibility of the kind of education colleges and universities provide, and it offers a way for these institutions to continue their involvement with students beyond the point of graduation.

It is an open question still whether or not the combination of markets and technology will reduce the gown to an anachronism or, worse, an educational remnant covering little more than prestige and privilege. Clearly, technology has extraordinary capacities for convergence and cooperation in a changing market for postsecondary education. The question is, will those tendencies be overwhelmed by the focus the market puts on winner-take-all competition? Whatever control they might have exerted in the past, colleges and

universities can no longer claim the right of eminent domain over knowledge or the certification of learning. In the age of the Internet, no institution can stand above the flow of markets powered by changes in both the demand and the delivery mechanisms for post-secondary education. More than ever before, universities and colleges find themselves swept into currents of change beyond their own power to direct.

The danger is that colleges and universities may come to acquiesce in those currents—to play to the market purely on its own terms, even at the expense of the deeper, more ambitious purpose of preparing students for lives of commitment and service as well as for individual opportunity and advancement. Institutions can neither ignore the forces of markets being spurred by technology, nor can they give over wholly to the values and motivations of sheer credentialing as their *raison d'être*. Preserving a meaningful balance between these two forces will become an increasingly important challenge for any institution.

Some institutions command enough resources and prestige to remain fairly secure within their own markets. Yet for the majority of institutions that enjoy neither a sizeable endowment nor a secure market niche, staying afloat may require strategies to diversify their revenue and appeal to new clienteles. Some have done so by a modest redefinition of their mission and the incorporation of a more diverse and largely older student body into traditional classrooms. Others have developed discrete programs for new nontraditional students while maintaining, largely unchanged, the traditional residential student population. Increasingly, the institutions that are successful under these circumstances are forming strategic partnerships with vendors in order to serve new clienteles more effectively. Ultimately, many institutions may find that their survival entails the formation of such partnerships with enterprises that can provide venture capital as well as marketing expertise for reaching new populations.

Many institutions may find that their survival entails the formation of strategic partnerships with enterprises that can provide venture capital as well as marketing expertise for reaching new populations.

To remain engaged with the world created by new markets, new technological applications, and new conceptions of the meaning of education, colleges and universities might consider the following propositions:

- As they face intensifying market pressures, colleges and universities must revisit fundamental questions of mission and core values. Losing sight of these bearings, institutions could all too easily find themselves adrift as they pursue new technological applications in search of market advantage.
- Colleges and universities must recognize how the growing spot market for education credentials, symbolized in the merit badge, exerts increasing pressure on the broader conception of a higher education, as expressed in the values and purposes of the academic gown. These institutions must devise strategies, including the adoption of electronic tools and methods, to remain engaged with a changing educational market and ensure that students continue to learn the value of an education that integrates the parts into a broader whole—preparing graduates both to succeed individually and serve as responsible citizens.
- Higher education institutions and their faculty must willingly seek out the new learning tools technology makes available and pursue those innovations that promise improved learning and increased efficiency, understanding that students will likely employ these tools and expect those who teach them to do the same
- College and university faculty must willingly reconceive the roles they play as agents of their students' learning: in the environment of digital technology, which accords ready access to information, it is reasonable to think that the faculty role as disseminator of knowledge should increasingly give way to that of mentor and guide, helping students to integrate information from multiple sources into a coherent frame of meaning. Just as important, in the design of teaching and learning experiences, faculty members must apply their subject expertise to determine what kinds of materials and modes of teaching will help their students learn more effectively.

For a thousand years, higher education has successfully put off most serious discussions of how learning occurs and what an understanding of that process might mean for instructional design. In the new millennium, the converging force of markets, intensified through the adoption of technology, may at last bring about a more effective linking of teaching methods with what is known about learning.

Some will want to argue that no real steps can be taken to reconceive teaching and learning in light of technology's advances without a fuller understanding of learning itself. However tempting the impulse to forestall all action for want of sufficient data, the forces of society will not accord higher education the leisure to accommodate change at its accustomed pace. "Winning" in the world of technology will require that faculty members make responsible judgments about learning processes and apply those judgments to their own teaching. The market is already rewarding those dot-coms that have understood and applied the fundamentals of learning from the learner's own standpoint. In a world that increasingly embraces the power of new technologies, what matters most are the questions that need to be asked: Who will be the dominant vendors of postsecondary education? Which educational consumers are the vendors likely to target? What is the game? What will constitute winning in this market?

It is a set of questions that every college and university needs to consider as the current of societal change continues to rise. Every duck swept into this water must ultimately learn to swim, and every ostrich that buries its head will find the sands shifting beneath its feet.

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The essay, "The Mission and the Medium," derives from a Knight Collaborative Engagement on Electronic Alumni Networks. The engagement was directed by Ann J. Duffield, Director of Communications for the Knight Collaborative and Senior Consultant for Marts & Lundy, Inc., and it was coordinated by Rick Morgan of the Knight Collaborative. Strategic teams from five liberal arts colleges participated in this engagement, which explored how technology might provide an institution's alumni with a more substantive involvement in the academic life of campus. Bryan Polivka of Caliber Learning Network and William Hoffman of Qwest Internet Solutions served as expert partners in the Electronic Alumni Networks Engagement.

The Electronic Alumni Networks project culminated in October 1999 with a roundtable. Participants included some members from all five institutional teams with their presidents and, in some cases, associate provosts, in addition to experts who brought a variety of national perspectives to issues of technology and its role in changing the market for postsecondary education. The following individuals participated in the Learning and Technology Roundtable and helped to shape the resulting essay:

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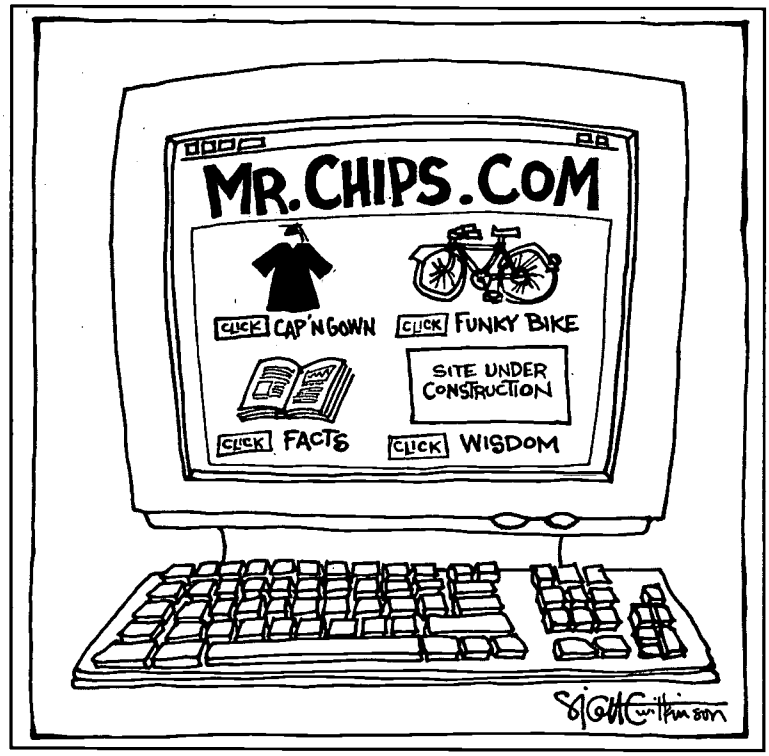

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