



TECHNOLOGY



Technology, Higher Education, and a Very Foggy Crystal Ball

B Y B R I A N L . H A W K I N S

Technology is dramatically transforming the nature of higher education. And yet, the changes that have occurred thus far in higher education—and those that are expected—have little to do directly with the technology itself. The transformation is being driven instead by the new opportunities and means of doing business provided by the communication media and the ubiquity of the technology. As a result of these opportunities, traditional educational institutions now face significant for-profit competitors, enormous new market potentials leading to intensifying competition, and most recently, a form of competition not faced by any other industry—a no-cost competitor.¹ College and university administrators have been confused about how to compete in distributed education, but this newest wrinkle potentially makes competition in this market unique. Another major factor contributing to the overall uncertainty in higher education is just how flexible institutions can be in responding to these competitors. Higher education, a fairly traditional marketplace, has so far made relatively few adaptations in the way it conducts business in the new environment.

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Illustration by Michael Northrup/Strobophoto

Predictions about the future are nearly impossible to make because of the discontinuities created by the speed and nature of the tumultuous changes in technology. Although this is true for all industries, higher education may be facing a level of uncertainty experienced by no other type of enterprise or industry segment. However, as murky or foggy as the crystal ball may be, the following ten predictions characterize a view of the future that may emerge. Again, these predictions have little to do with the technology itself but instead focus on the emerging new economics of higher education and the institutional and organizational manifestations brought about because of the new *opportunities* afforded by the technology and the new communication media.

1. The New Markets Will Be Smaller Than Often Predicted.

Speculation about the size of the potential market for higher education and distributed learning may be exaggerated. Much of the analysis regarding the potential size of the distributed learning market has been based on rather optimistic—and potentially unrealistic—assumptions.² Assumptions have been made about the amount of retraining needed to enable a more information-driven society, with those estimates then translated into credit hours and FTEs. Compounding the problem, these models have been applied to the rest of the industrialized world, resulting in descriptions of enormous potential markets. There is clearly a need and a very sizable market for skill-building and career-enhancing learning. But how much of this will occur via the purchase of commercial, online instruction or learning is less certain.

Some studies have suggested that more than 128 million new FTEs will be added to the market, in addition to the roughly 4 million additional FTEs entering traditional forms of higher education. Although these numbers would tempt any entrepreneur, they contain assumptions that may exaggerate the “real” size of the marketplace. For example, part of the 100 million non-U.S.-based potential FTEs will not want a curriculum presented in English. While some of the subject matter will transcend language, other elements will not. There also may be significant cultural challenges. How effectively will a U.S.-based curriculum enable residents of India or Africa to master computer skills?

A further reduction in the potential size of the market will occur when the people who desire these new learning opportunities decide whether or how much they will be willing to pay for these experiences. Any fees at all will create a barrier to

participation for some, and graduated fee structures will carry additional incremental barriers. Unfortunately, no one really knows where these price-points are and thus how large the actual market may be.

A final limitation on the potential market is course accreditation. Many in this marketplace are simply seeking the learning opportunity. Others need a credential. Will credits transfer among institutions to enable progress toward a certificate, a degree, or some other end that is perceived to be important for career mobility? Ultimately, the size of the market will depend, in part, on how effectively these needs of customers are met.

2. Residential Campuses Will Still Be Significant.

In discussions about distributed education, people often draw the erroneous conclusion that residential education is doomed to a downward spiral. However, significant erosion of residential education is actually quite unlikely, for two reasons. First, residential education works. It is a highly successful formative experience, proven in its ability to

move late adolescents across the transom to intellectual and emotional maturity.

Once a “safe haven” available only to the elite, residential higher education has become increasingly accessible over the last fifty years.

The trend is toward more inclusion, not away from it, and this is good. Residential education provides young people the opportunity to experiment and to explore various academic directions. It produces positive outcomes in the long run for the students and society.

Whereas this argument can be applied to nontraditional students as well, it is particularly appropriate for the 18-to-22-year-old population.

Second, the overall market for higher education is expanding, which will mitigate some of the effects that distributed education may have on residential education. To be sure, competitive alternatives will draw off a larger percentage of the new student population. However, the “net” decrease in total market share will correlate directly with how well current residential institutions can develop a previously unfound ability to be flexible and to create meaningful and successful partnerships with other academic institutions as well as the for-profit players in this environment.

It is important to note that demand for residential education programs at the nation’s upper- and middle-tier institutions has been increasing in the last decade and is likely to continue to do so. Many state universities now have capped their admissions. It is also likely that total FTEs at residential campuses will continue to increase as the necessity of a college credential



becomes increasingly apparent to larger segments of the population. Certainly there will be attrition at the margins. Private institutions with high tuition and low selectivity will be particularly vulnerable to online, lower-cost competitors. There will be casualties. But overall, the picture is quite positive.

3. An Erosion of Traditional Markets Will Occur.

The economic structure of a college or university is highly differentiated. Different academic departments have differing economies of scale. Some departments may consist of large numbers of professors teaching in relatively uncomplicated facilities with low equipment or support staff needs. Others may have fewer faculty but high collateral needs—programs in the sciences, for example. Some areas may be highly “profitable.” Others may fail to support themselves. How well an institution copes with the advent of a distributed learning paradigm depends to a great extent on how well it has mastered its own internal economics.

The most cost-effective departments offer large lecture courses, have minimal library needs, and use high numbers of adjunct faculty. With low overhead, significant net revenues are possible. This paradigm is especially evident in schools and colleges of business, and business students are precisely the target market that many of the for-profit competitors are seeking to develop and attract. This is important because profitable programs are used to subsidize unprofitable ones, helping the college or university achieve its balanced mission of offering courses in a broad spectrum of disciplines.

The economics of cross-subsidization are not well understood by most members of the campus community. However, mastering these concepts is essential for coherent planning regarding distributed learning programs. If a proprietary program, such as an asynchronous business program, begins to significantly erode the enrollments of a given institution's residential program, it will also negatively affect the cross-subsidized economics of other disciplinary units. This is a particular problem if courses on the network become commodities, resulting in extremely low-cost, academically acceptable course alternatives. Furthermore, depending on the pricing structure, an institution's new distributed learning program may also destabilize the economic models that a college or university uses to operate in a prudent manner. The point here is that both internal and external distributed learning efforts may affect the entire economy of the institution.

4. Institutions Will Not Effectively Participate as Stand-Alone Entities.

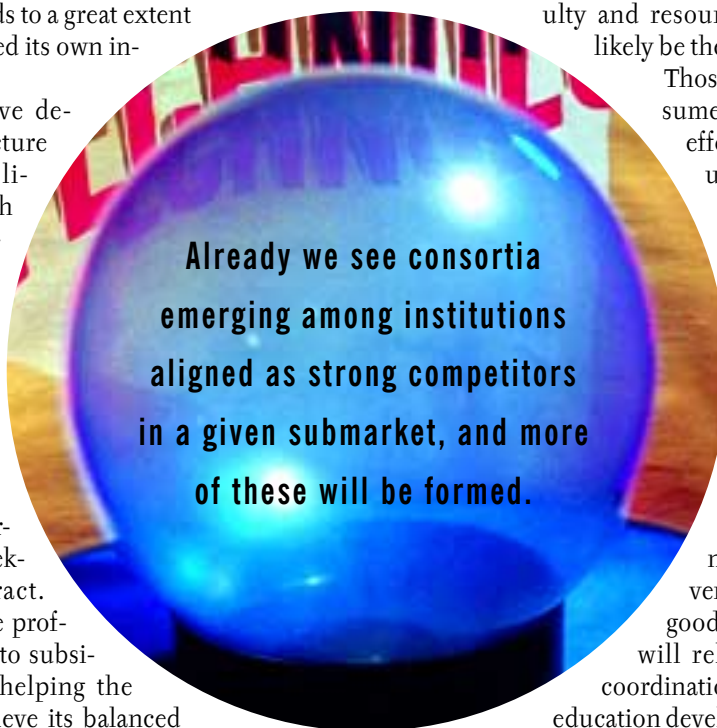
Many colleges and universities are attempting to develop their own distributed learning environments. Yet the cost and complexity of such structures—along with an expected difficulty in making them as nimble, flexible, and responsive as they will need to be—will almost certainly serve as a significant barrier to individualized solutions. Cooperation among institutions will become increasingly essential. Already we see consortia emerging among institutions aligned as strong competitors in a given submarket (e.g., business education), and more of these will be formed. Initially these efforts are focusing on professional and continuing education. So far, few entrants have attempted to develop a broad-ranging curriculum that would qualify as a liberal arts education. For this reason, collective action and other consortial efforts drawing on faculty and resources from many institutions will likely be the most successful models.

Those in higher education have long assumed that not-for-profit educational efforts result in a higher-quality product than commercial efforts. Yet institutions need to throw off their defensiveness, question this assumption, and embrace the fact that combined for-profit and traditional institutional partnerships may be some of the most successful models for creating and delivering these new learning environments.

Can higher education learn to effectively “partner” with other not-for-profit and with for-profit ventures? Its track record so far is not good. Effective online learning models will rely heavily on collaboration and coordination with external entities. If higher education develops that ability, new opportunities and new leveraging will result, increasing the likelihood of success. Yet the jury is still out on whether our institutions can develop these skills. We may continue to bungle along, to our collective long-term detriment.

5. There Will Be a Significant Market Shakeout.

There are already hundreds of potential competitors in the postsecondary education marketplace. Although our historical dialogue has focused on the 3,600 institutions of higher education—accredited institutions housed in bricks and mortar—entrants into this market appear almost monthly. Some of these are physical, some are entirely virtual, and some are a combination of the two. The interesting thing about these emerging players is that each is looking for a small slice of the educational “pie.” Some will succeed; others will not. A great deal of venture capital is being invested to get these efforts off the ground, but it is not clear whether the stock market fluctuations and turmoil of the late winter and early spring of 2000 will dampen



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this enthusiasm. In any market, there is an early explosion of competitors, with only a few surviving to the maturity of the market. In the early part of the twentieth century, there were well over three hundred automobile manufacturers. Forty years later there were fewer than ten and by the end of the century fewer than a handful. This same pattern can be seen in a variety of emerging industries; the educational revolution of online instructional offerings should be no exception.

Although many colleges and universities are currently touting their grand plans for this marketplace, there is likely to be a shakeout in this sphere as well. As already stated, it is highly unlikely that many institutions will be able to create viable stand-alone models. Rather, the process will be driven by partnerships and consortia. Groups of schools are currently talking about using the traditional (but not necessarily logical) model of athletic conferences as a basis for collaboration. Bonding based on the strength of similar programs is also likely to increase.

Ultimately, the shakeout in distributed learning will be driven by the marketplace. Although many traditional institutions continue to believe they will be the “net providers” of these courses, eventually they will realize the need to become the “net purchasers.” Only after colleges and universities realize that there will be no untold riches coming from this new set of educational ventures will higher education institutions start to make decisions on the price and quality of these courses and on the leverage they provide. Ultimately, these market factors will define the market shakeout in distributed learning.

6. New Extra-Institutional Solutions Will Likely Be Required.

Can a distributed learning “business” operate effectively within the confines of the traditional college or university given the current faculty governance model? Conversely, can our current faculty governance model work in the new market environment? The answer is “no”: successful distributed learning programs will require a more dynamic, more flexible governance model. It is highly unlikely that a model bolted on to our existing structures would be able to achieve the flexibility, nimbleness, and responsiveness that these new business models may require.

Colleges and universities taking a wholesale approach to distributed learning, rather than an experimental or isolated-course approach, will face development costs far in excess of anything they can imagine. The money to cover these costs is simply not present within existing budget structures. Should institutions adapt existing structures, or should they create new organizational types? Should they develop extra-institutional groups to handle this new distributed environment? Are they prepared for mergers and acquisitions in higher education? Do the traditional faculty-governed, credit-driven approaches to higher education have the needed flexibility and ability to

quickly respond to market pressures? Although there is certainly plenty of room for alternative models, units outside of the traditional college or university enterprise should be given due consideration. These may be not-for-profit or dot-org structures, but more than likely they will be dot-com alternatives. With these alternatives, the support costs of developing these new courses can be better understood, new approaches to technical support can be defined, and different employment contracts can be negotiated with faculty who desire to work in this new enterprise, thus creating alternatives to tenure, to workload, and to the current faculty reward structures.


7. The New Marketplace Will Be Associated with New Models of Faculty Motivation.

Why should a faculty member spend the extra time and energy to develop materials, courses, Web sites, or distributed learning environments and software when there is no direct reward to do so? Some institutions grant faculty release time to work on new delivery methods, but often only on an experimental basis. This strategy results in fewer courses for the residential curriculum to support prospective distributed offerings, and it brings up the important issues of faculty workload and governance.

Faculty governance structures work against the high degree of flexibility that is needed to develop distributed learning. Simple release time may not be the best incentive to encourage faculty to do their best work. And yet innovative reward systems, out-of-the-box faculty incentives, and nontraditional approaches all are viewed askance. While many schools are struggling with adapting their copyright and patent policies to this new online educational arena, it is not clear whether the imposition of these historical models will generate creativity and will motivate those faculty who have these special talents.

Attracting and motivating a new breed of entrepreneurial faculty is likely to be an important challenge. Some faculty will undoubtedly be willing to trade the security and assurances associated with a tenured position for greater economic opportunities and pay-offs. If they don't find these options within the academy, they will seek them in the dot-com world. A wide variety of employment models for faculty recruitment and retention may well be required, but such an approach will be difficult, if not impossible, within the confines of traditional faculty governance and the rather singular set of employment rules at most institutions.

Although the focus here is on courses offered to students at a distance, the issues apply equally to the traditional campus environment, where faculty need to change their teaching methods to relate to the new learning styles of today's students. The economics associated with implementing a campus-wide faculty support infrastructure, including course-management systems, are daunting. Those higher



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education institutions that are able to quickly devise new conventions for faculty support will have the more felicitous economic position in this changing era of higher education. Once again, the question turns on the degree of flexibility and adaptability that colleges and universities can develop.

8. The Technology Will Transform College and University Operations.

The underlying technology will become less obtrusive in the future and will likely take a background position that is hard to imagine at the moment. Networking and connection issues will be far less dominant as prices continue to drop and broadband networking becomes nearly ubiquitous, even in remote geographical areas. Developments in security and authentication will support a far greater amount of e-commerce, e-business, and personal collaboration in a fashion that is both simple to use and worthy of trust.

We will likely see a continuing trend toward the unbundling of institutional services and an increase in outsourcing to application service providers (ASPs) who will provide massive-scale professional support for diverse activities including network operations, software upgrades, Web and e-mail servers, database and backup servers, directory and security servers, and even complex systems for administration, instructional management, and learning. The technical design and support of information and communication services will increasingly fade in importance as these services become utilities that are run in an almost invisible fashion.

Perhaps the most important technological change will be the development of systems that combine video, audio, and computer technologies into “appliances” characterized by radically new and improved human interfaces. These devices are likely to replace today’s telephones, televisions, radios, and PCs and will become the standard “fixtures” for personal, office, and household communications.

A related convergence will take place behind the scenes to deliver all types of voice, video, and data communications for all types of devices over a common Internet, greatly reducing the cost of access for all. The same office and household infrastructure installed for entertainment and personal communications (including today’s televisions and telephones) will directly support access for information, education, and many other activities, providing a powerful driver for affordable access everywhere.

If such networked communication devices become as important as many predict, a new question arises. Will that new generation of technology help reduce the digital divide that we are currently experiencing (and seeing widen) in our society, or will the new technology widen the divide even further? If the technology becomes ubiquitous, and if these other technological changes occur as well, the fundamental operations and the available learning will reshape the “face” of higher education for an ever-larger segment of our society.

9. The Necessary Library Infrastructure Will Be Missing.

What about the student who enrolls in an electronic course only to find that he or she must travel physically to the library

to access the support materials needed for the course? The irony of such a dilemma has not come fully into focus for the many who talk so glowingly about supporting the new learning and about connecting all the world’s libraries electronically. Perhaps the greatest obstacle to creating a complex and comprehensive set of distributed learning offerings lies in meeting the information needs of students in an electronic medium that is consistent and integrated with these new learning modules.

How can colleges and universities provide access to a sufficiently rich and comprehensive body of electronic resources in this distributed environment? Many institutions have developed initial approaches to offering courses over the Internet, but few, if any, have defined a scalable and viable strategy for making “library” resources available to “distant” learners. The provision of electronic links to appropriate course-supporting materials has been left to individual faculty members (and, indeed, to the students enrolled in the courses), none of whom have access to the types of services provided by librarians in the traditional campus setting. Moreover, providing electronic access is extremely difficult under current copyright limitations, which require closed access, key servers, or other restrictions. The new Digital Millennium Copyright Act (DMCA) has all but erased the issue of fair use. As a result, defining a strategy, in a distributed learning environment, to provide students with adequate access to primary source material is unclear at best.

With colleges and universities having difficulty providing adequate materials in a residential setting, how can they provide access to the necessary resources online? The Web does not provide full-text materials, and the legal and business challenges of making these resources available electronically are significant. Furthermore, to have each institution or organization that intends to provide online courses invest in duplicative structures would be extremely wasteful. A collective approach is called for, and such an effort should be an essential part of any plans to enter this distributed learning environment.

10. There Will Be an Increase in Institutional Market Segmentation.


The higher education enterprise will be fundamentally different in the next decade or so, with much greater segmentation in the market than we currently find. For the past several decades, higher education has made an almost inexorable march toward homogeneity, with the vast majority of institutions trying to climb up the “food chain” defined by the Carnegie classifications. But even as the new technology has created greater possibilities for advancing teaching and learning, higher education has continued to focus on increasing the research agenda. Institutions will need to be far more selective in choosing content areas to focus on and will need to compete for that intellectual space in a much more aggressive manner.

Level of service will also become an increasing factor in segmenting this marketplace. Online programs offering career placement, support for disabilities, and any number of student services may provide great advantages for some in the

market but may be a liability for others. As James Duderstadt has so eloquently argued, our institutions are having to come to grips with unbundling the complex set of services that are currently included in the price of higher education as we know it.³ This unbundling will take two forms. The first is to outsource many of the activities currently duplicated from one institution to another. The second is to create a cafeteria of choices for students at residential campuses. This will change the price the student pays and will adapt to specific "customer" needs. Tomorrow's online students will demand a robust and varied set of services and content. This new environment of choice will make the old model of education more difficult to "sell" to the new consumers of higher education.

Finally, even though these new learning environments can be viewed solely as new products to be sold, institutions have to consciously decide how their offerings should be positioned for alumni. Alumni loyalty and philanthropy are highly valued by most colleges and universities. The logo, the athletic teams, the mascot, and the "brand" of the institution all contribute to a "stickiness" that binds many alumni to their alma maters. It is hard to envision these same loyalties emerging within and about these electronic "campuses," and yet these offerings may be used to further cement and solidify these relationships. How an institution positions and offers its array of online courses, services, and other offerings will undoubtedly shape the way in which alumni perceive and support their institutions in this new millennium.

Conclusion

What the future will hold will be played out in time. Without question, this will be the most tumultuous period in the history of higher education. There will not be one size to fit all, and the variation in online environments not only will rival but will surpass the diversity of types of institutions that presently characterize and distinguish the American higher education system. If we truly believe that this current diversity of institutional approaches and foci in higher education is a strength, then we should cease our defensive postures about online education and we should welcome, shape, and embrace the emerging new diversity as well. 

Notes

1. Cindy Loose, "Billionaire to Give \$100 Million for Free Online University," *Washington Post*, March 15, 2000, A13.
2. Michael G. Dolence and Donald M. Norris, *Transforming Higher Education: A Vision for Learning in the 21st Century* (Ann Arbor, Mich.: Society for College and University Planning, 1995); William B. Johnston, "Global Workforce 2000: The New World Labor Market," *Harvard Business Review* (March/April 1991).
3. James J. Duderstadt, "Can Colleges and Universities Survive in the Information Age?" in Richard N. Katz, ed., *Dancing with the Devil: Information Technology and the New Competition in Higher Education* (San Francisco: Jossey-Bass Publishers, 1999), 1-25.

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