

# NEW EDUCATIONAL WEALTH AS A RETURN ON INVESTMENT IN TECHNOLOGY

By William H. Graves

**T**he Computer Science and Telecommunications Board of the National Research Council first described the “IT paradox” in 1994: “Some economic studies have suggested that the large investment in IT by the service sector has not been associated with substantial gains in productivity as measured by national macroeconomic statistics. . . . [Yet] the use of IT now appears more essential than optional.”<sup>1</sup> Information technology had become the competitive edge in the provision of services. Service companies that had not infused technology into their business models were disappearing while IT-savvy business models were enabling some companies to rise to higher levels of competitive excellence. And entire new service sectors had been established, ones that could not have existed without certain enabling technologies.

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Within higher education, meanwhile, the nonprofit sector is increasingly competing with innovative, for-profit postsecondary learning providers, such as the University of Phoenix Online. Does the future of nonprofit higher education hang in the balance as its leaders learn the competitive lessons of the study conducted by the National Research Council? Are those traditional colleges and universities that do not successfully infuse technology into their service and “business” models at risk? Are higher education leaders managing IT as an expenditure (a loss of resources) or as an investment in competitive advantage (a potential for new educational value and “wealth”)? Indeed, the role of executive leadership is to create new wealth, not to manage expenditures and allocate shortages—an idea attributed by Carol Twigg to Walter Wriston, the retired chairman of CitiBank.<sup>2</sup> As Wriston wrote ten years ago: “Information technology has . . . produced a new source of wealth that is not material; it is information—knowledge applied to work to create value.”<sup>3</sup> Are nonprofit colleges and universities realizing a return on

investment (ROI) in this new source of competitive wealth?

### **The Role of Leadership**

Higher education leaders are struggling to manage IT expenditures while simultaneously being pressured to spend more on competitive IT necessities, such as upgrading the administrative system, licensing and supporting a course-management system, and creating a campus portal. Much of this pressure comes from students, who expect the immediacy and self-service made possible by the anyplace-anytime, online service modality. Even today’s younger students who choose a residential experience for its role in personal maturation and acculturation want as much online self-service as possible. They are, after all, no more conscious of the Internet than their parents are of electricity, which is noticeable only when it is unavailable. So institutions with a focus on customer satisfaction are using technology-aware instructional models and the portal’s promise of integrated, comprehensive, personalizable self-

service as a customer-satisfaction goal, whether serving Internet-savvy young students in traditional residential classrooms or assisting working adults whose career and personal responsibilities constrain or prohibit real-time participation with the instructor in a campus classroom or distant classroom. Integrated, comprehensive, personalizable, online self-service is expected and favored by almost *all* students, provided that just-in-time human assistance is available on those occasions when self-service fails to meet individual needs.

The emphasis on self-service may suggest the demise of the traditional, high-touch services provided by the faculty and staff. Perhaps more apt words than *demise* are *redesign* and *transformation*. The challenge inherent in the inexorable trend toward online self-service is to redesign the form and substance of high-touch human intervention throughout the educational process—from the classroom to the administrative office. That challenge is the key to creating Wriston’s new educational “wealth,” understood as

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an increase in the societal and private educational benefits derived from technology-enabled increases in the effectiveness and efficiency of expert human intervention in the educational process.

Considered only as an expenditure, IT is viewed by many higher education leaders as reducing the availability of resources elsewhere in an organization's capital and operating budgets. But managed as an investment, IT holds the promise of producing returns that justify its cost. The issue is not whether IT can increase the quality and flexibility of academic and administrative services and their attendant levels of customer satisfaction; clearly, IT can do so. The issue is whether the IT expenditures required to achieve such ends can be focused and managed to improve the overall return on investment (ROI) for the organization—the department, the institution, the state system, and so on. In other words, increasing the return on IT investments within a higher education organization equates to using those investments as leverage for increasing the return on the overall investment in the organization. In this context, providing customer-satisfying IT services at a competitive cost per customer becomes a lever for improving the ROI in higher education's core assets—its intellectual capital (faculty experts and library resources), accreditation, physical plant, and so on. This is a different perspective on ROI in IT, which traditionally has been based on metrics such as the percentage of stakeholders using e-mail, the Web, and other IT resources. The difference is that the traditional ROI perspective measures the diffusion of IT usage, whereas the “new-wealth” ROI perspective focuses on cost-effectively and competitively infusing IT into academic and administrative processes to achieve competitive, mission-critical, measurable outcomes.



## Whose Investment?

ROI in higher education is most appropriately judged by the investors in higher education and may be judged differently by different investors. In other words, ROI in higher education is a relative concept—relative to the goals of the various investors. Those goals can be as disparate as reducing costs per credit hour, achieving the career or social advantage associated with the most prestigious institutions, demonstrating competencies required for Cisco certification, improving a working adult's professional or occupational performance, or increasing a state's college-going rate by providing more flexible access to educational programs.

The governing board of a nonprofit higher education organization represents the institution's “investors”:

- Traditional college-age (18–22) students and their parents
- Adult students—lifelong learners
- Executive and legislative branch policymakers responsible for allocating tax revenues directly or indirectly to the organization
- Employers and grantors contracting for employee education or other programmatic services
- The organization's endowment board, representing charitable funding organizations and individual donors

Each of the above groups of investors invariably seeks the best-possible return on investment relative to its goals. Higher education leaders thus need to understand these varied ROI goals. The following supply-and-demand taxonomy—borrowed from economics and adapted to the goals of higher education as viewed by its investors—may be helpful in assessing why investors have different goals.

## Goals and Fulfillment Strategies

References to traditional colleges and universities often evoke a paradoxical reaction in external discussions about the state of higher education. On the one hand, higher education in the United States is frequently described as having no peer; on the other hand, it is also described as being unresponsive both to pressing educational needs and to increasing operating expenses.

As a result, governing boards, political leaders, and business leaders cite the need for more “business-like” leadership and management practices in higher education. They appear to believe that academic programs are often indiscriminately *supply-driven*—educational offerings arising from the traditional academic business model based on tenure, faculty governance of the curriculum and decision-making, and other inwardly focused institutional governance and financial practices. These practices were established, in large part, to provide education as a *societal good* in which educators focus on knowledge for the sake of knowledge and on the preparation of a generally educated citizenry to provide long-term social, political, economic, scientific, and cultural leadership for the nation. This indeed describes my own reasons for being an educator for over thirty years and my belief that the core traditions of residential liberal education and academic freedom are important contributors to the nation's democracy. But education can also be a



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*private good* aimed at employers seeking to improve the performance of their organizations and at individual students hoping to advance their professional or occupational interests, often for practical financial reasons. Most policymakers believe that education as a private good should be *demand-driven*—that is, purposely designed, with external input, to meet the specific performance requirements of employers and the professions.

The United States is experiencing increasing enrollments in education as both a societal good and a private good. Enrollments in education as a private good, however, are increasing at a higher rate. And education as a private good is growing at an accelerated rate in one of its relatively new subsegments: skills-oriented noncredit certification programs. In addition to the approximately 17 million students enrolled annually in all traditional higher education programs tracked by the Department of Education (DoE), Clifford Adelman of the DoE estimates that there are many more millions annually engaged in these certification programs; some of the programs are located at community colleges and other traditional institutions, but many are not. Indeed, Adelman reports that for-profit providers account for a rapidly growing proportion of occupation-oriented enrollments and that many of these enrollments are driven by the need for competency-based certifications, the new currency in many sectors of today's job market.<sup>4</sup> The DoE has not yet developed data-collection protocols to account statistically for this shadow learning economy.

Recognizing these demand-driven needs and trends, higher education policymakers are often frustrated by the tendency of many colleges and universities to rely almost solely on supply-driven policies and business practices to address demand-driven educational needs.



Higher education leaders thus need to help their internal constituencies understand the difference between education as a societal good and education as a private good, the forces that are bringing that distinction to the fore, and the need to pursue strategies that depend on the nature of the goals that the strategies are intended to achieve. Education as a societal good has long been supply-driven and arguably should remain so, but traditional nonprofit higher education, by sticking to supply-driven policies and business practices, is losing its incumbent advantage in the growing demand-driven market for education as a private good. The differences in societal and private educational goals beg for different fulfillment strategies, and institutions should pursue the goals that are appropriate to their missions. Public institutions, for example, have publicly mandated goals, and these goals often embrace both education as a societal good and education as a private good. In contrast, private institutions are freer than public institutions to focus on only one of these educational purposes—or to emphasize one over the other.

The governance and management model in traditional higher education is supply-driven in part because Ph.D.-holding faculty members were educated in the graduate programs of research universities. They accordingly bring to their employing institutions their belief that the “best” institutions—the schools grant-

ing them their Ph.D. degrees—are those that aspire to or already have *prestige* in a national or international context. The result, according to a recent study, is that too many institutions, independent of their missions, compete for prestige as measured by research grants and publications and by the academic profile of the incoming freshman class—and/or by the national rankings of athletic teams in the revenue-generating sports.<sup>5</sup> But prestige, though “sticky” once acquired, is not easy to earn. After all, only ten institutions appear on any top-ten list. Most institutions could reduce their risks by competing less for prestige and more for reputation as measured by customer satisfaction—that is, investor satisfaction. Reputation, in this sense of customer satisfaction, is more immediately earned and more quickly lost than prestige. It is a demand-driven concept. As the Internet propels the expectation for online self-service and flexibility, even those institutions that choose to pursue prestige may have to increase their attention to customer satisfaction—and thus to some blend of demand-driven and supply-driven governance models. But few are doing so, which is why transformation appears to be in greater evidence today at reputation-driven institutions than at prestige-driven institutions.

### Self-Service, Human Intervention, and Transformation

One paradox of the Internet is that it can be used in the educational process to increase self-service while simultaneously improving the quality and efficiency of high-touch human intervention. An earlier example of this same paradox was the printing press, which also increased the capacity for self-service learning. It reduced the need for transcription, both by the creators and keepers of knowledge and by the apprentice learners of that same knowledge. But institutions did not

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simply build libraries of printed materials and send their students to the libraries to self-educate themselves. Colleges and universities continued to construct classrooms and employ faculty, because in order to learn, most students need more than self-study access to knowledge. They require an instructor's guidance and intervention and the instructor-facilitated collaborative learning that is traditionally associated, for example, with the seminar. Likewise, although the Internet increases access to knowledge resources and further lubricates self-study, it does not eliminate the need for instruction. It simply challenges higher education to redesign the form and substance of instructor/student interaction.

Today's course-management systems, for instance, reduce the scope of the instructor's course-management efforts. They allow instructors to increase self-service for students by providing appropriately authenticated and authorized online access to the syllabus, class schedule, assignments, course notes, external online content resources, learning assessments, grades, and so on. Integrating the administrative system with the course-management system further reduces course-management tasks by automating enrollment, drop-add, grade-reporting, and other data-exchange processes. This means that once instructors have mastered the technology tools, they can concentrate on student learning rather than on knowledge delivery and course management.

E-mail and listservs have been used for some time to encourage discourse and collaborative learning, of course. But these tools are more difficult to manage than the course-management system's anyplace-anytime Web-threaded discussions, which frequently become the center of gravity for instruction pedagogically constructed around the flexibility of anyplace-anytime, interactive discourse among students and among students and their instructors.



Whether these tools are used to complement and transform the classroom or to lay the foundation for a mostly online, anyplace-anytime “virtual” classroom, instruction and learning become more continuous and spontaneous and less episodic. These are not the only expressions of the classroom concept, but they are the extreme points on a blended continuum of instructional delivery possibilities—from three weekly contact hours constrained by place and time to online contact unconstrained by either place or time. And some institutions and their faculties are overcoming the constraints of terms and cohorts by extending instructional flexibility to include such features as rolling enrollments, self-paced opportunities to learn, and certification of the results through competency-based assessments. Even in the context of the traditional residential experience and academic term, there is compelling evidence that instruction can be redesigned to improve learning outcomes while reducing instructional costs. These efforts, many of which have been funded or inspired by the Pew Grant Program in Course Redesign, often involve the use of rich and engaging learningware for self-study, a redesign of the instructor's role, and a reduction in contact hours.<sup>6</sup> Such efforts are increasing instructional flexibility, learning outcomes, and overall ROI from the per-

spective of both the investor and the internal management.

### Increasing ROI

Various ROI metrics can directly assess the financial and operational aspects of the IT organization, and higher education leaders should insist on the use of such analyses. But leaders should also take care to avoid some of the common mistakes made over the years by those who do not understand the new economics of IT. For example, amortizing a personal computer over five years increases the ROI in hardware from a purely financial perspective, but Moore's law implies that a personal computer will have lost its value in two to three years—even though it still “works” as well at the end of five years as it did on the day it was purchased! Similarly, per-student IT support costs can be misleading unless they are calculated in conjunction with some measure of student satisfaction with that support. For example, an increase in per-call help-desk costs can actually be a positive trend because improvements in IT services will lead to fewer calls to the help desk, which nevertheless remains a necessary safety-net expense. So measuring the value added by IT in terms of organizational innovation, improvement, and competitiveness must be the focus.

Most of the goals that a higher education organization might have for using technology to competitive advantage can be captured in the four-item “redesign” agenda described below. Expanding each of the four general redesign themes is a technology-enabled strategy for achieving the redesign; under each strategy is a sublist of some of the possible measurable outcomes that can be used to guide the strategy and determine its success. These measurable outcomes are indicators of overall ROI in the organization from the perspective of its investors or of some subgroup of its investors.

1. *Redesign and improve marketing and student recruitment.* Use cost-effective e-mail, a student-recruitment Web site, and a toll-free call center to improve the marketing campaign of an educational program, an institution, or a consortium. This strategy can be directed selectively toward a number of outcomes:
  - a. Increase recruiting yields (enrollments)
  - b. Decrease marketing and recruiting costs per enrolled student
2. *Redesign and improve services to enrolled students and other stakeholders.* Redesign administrative and academic support services as the basis for an authenticated portal providing “one-stop” self-service for students and other stakeholders and a toll-free call center providing high-touch assistance on demand. This strategy can be directed selectively toward a number of outcomes:
  - a. Decrease administrative staffing costs, by redesigning services to provide integrated, personalizable, online self-service processes
  - b. Increase service satisfaction, among students, alumni, faculty, staff, and so on
  - c. Improve communication and collaboration, by creating a sense of community as measured by surveys
  - d. Increase alumni giving
3. *Redesign and improve teaching and learning.* Redesign core courses and other “strategic” courses to take pedagogical and androgogical advantage of technology. This strategy can be directed selectively toward a number of outcomes:
  - a. Improve learning outcomes and retention and graduation rates
  - b. Reduce unit instructional costs
  - c. Improve students’ satisfaction with instruction as measured by end-of-course surveys
  - d. Increase students’ fluency with the online medium and its tools for research, communication, and publication
4. *Redesign and increase access to selected programs.* Offer online or blended credit and noncredit programs to compete in selected “convenience” markets, such as the markets for professional and occupational programs. This strategy can be directed selectively toward a number of outcomes:

- a. Increase enrollments among students who otherwise could not or would not enroll
- b. Increase “profitable” revenues
- c. Reverse declining enrollments
- d. Accommodate mandated or inevitable enrollment growth
- e. Avoid new capital costs

The following are some examples of ROI based on the above “redesign” agenda.

*Tennessee Board of Regents Online Degree Programs.* In 2000, the Tennessee Board of Regents mandated a collaborative effort among constituent institutions to improve access to higher education in Tennessee by offering entirely online degree programs—initially three two-year and two four-year degree programs. The goal was to increase the state’s college-going rate and the penetration of degree holders in the state’s population (outcome 4[a]). A marketing plan/strategy that is a variation on strategy 1 resulted in a 500 percent increase over initial enrollment projections. In less than a year and with no infusion of new resources, the Regents Online Degree Programs (RODP) opened a one-stop “virtual” door and subsequently had to cap initial enrollments at approximately 1,900 in the fall of 2001 and at approximately 3,500 in the spring of 2002. About 75 percent of these enrollments were accounted for by students who would not otherwise have enrolled in any institution. RODP enrollments generated over \$1.2 million in tuition and fees in the fall of 2001 to help participating institutions recover their costs (outcome 4[b]). Strategies 2 and 3 are currently being applied as RODP evolves to provide a flexible (online), high-quality student-service environment and to ensure the quality of instruction and learning.

*Montgomery College.* Maryland’s Montgomery County is enjoying rapid economic expansion, due in part to a vigorous local biotechnology industry. Montgomery College, the “county’s community college,” is well into a multiyear effort to improve the effectiveness, efficiency, and flexibility of its student services with Web-based self-service (outcomes 2[a], 2[b], and 2[c]) while accommodating rapid growth in its student body by blending online instruction with reduced contact-hour classroom instruction to decrease pressure on its

classroom plant and to increase instructional flexibility for students (outcomes 4[a], 4[d], and 4[e]). The college’s Center for Teaching and Learning has embarked on a campaign to use technology to improve learning outcomes, online fluency, and student satisfaction (outcomes 3[a], 3[c], and 3[d]).

*University of Baltimore.* Located in the inner city, the University of Baltimore (UB) had been losing enrollments from its dominantly working-adult student body as suburban development and commuting patterns pushed jobs away from the inner city. UB reversed its declining enrollments by introducing the first entirely online AACSB-accredited MBA program in 1999 and has now grown that “Web MBA” program to a scope that could not be accommodated by the existing physical plant (outcomes 4[a], 4[b], 4[c], and 4[e]). Along the way, UB embarked on a campaign to improve learning outcomes, online fluency, and student satisfaction through the wise use of technology, not only within the WebMBA program but also in core arts and sciences courses (outcomes 3[a], 3[c], and 3[d]). UB’s initiatives have earned new grant funding and national recognition by *U.S. News & World Report*.

*Fairleigh Dickinson University.* Using technology, Fairleigh Dickinson University (FDU) has reconnected to its roots as a university focused on preparing students to succeed in a “globalized” economy and culture. The Internet is the means used to connect FDU students and instructors with their counterparts around the globe to study pressing issues from a global perspective and to engage students in an active learning environment (outcomes 3[a] and 3[c]). FDU was the first university to require every residential undergraduate student to complete one online course per year, not only as the foundation for the globalization of the curriculum but as a means to ensure that students acquire fluency in the online medium (outcome 3[d]). FDU is now engaged in rolling out online versions of some of its most marketable professional programs to increase its “profitable” revenues, extend its reputation for responding to market needs, and create a “franchise” market among other institutions wanting to brand and use its online programs (outcomes 4[a] and 4[b]).

*National Louis University.* To increase its profitable revenues while responding to the need for affordable IT certification training in Chicago (outcome 4[b]), National Louis University (NLU) has partnered for a turnkey IT certification training program. The program allows students to register at any time, study online without formal instruction, and still have face-to-face and phone access to an experienced mentor as needed. Marketing, student recruitment, student loans, and other forms of student services are included in the turnkey solution “imported” by NLU (outcomes 1[a] and 1[b]). NLU is now transitioning its MAT degree program to an online model that parallels in some respects the noncredit IT-certification program (outcomes 1[a], 1[b], and 4[c]). NLU intends to export the online MAT program as a turnkey solution for other institutions (outcomes 4[a] and 4[b]). Meanwhile, NLU is also engaged in a multiyear portal effort to provide flexible student services in an online self-service modality (outcomes 2[a-d]).

## A Partnering Strategy

All of the examples described above depended for their success on leadership and partnerships. All involve partnerships between a nonprofit higher education organization and one or more companies. One example, the Tennessee Board of Regents Online Degree Programs, is an interinstitutional partnership among participating Tennessee Board of Regents institutions. Fairleigh Dickinson University and National Louis University foresee interinstitutional partnerships in which selected professional programs are exported to be marketed and branded by other institutions acting as franchisees, all with assistance from a partner company.

Even if an institution can internally support and accomplish the improvements described above, partnering is often a preferred strategy because it uses external resources and expertise as leverage for scarce internal resources, including time, attention, and accountability. For example, innovation and transformation often require additional IT resources, IT expertise in new areas of technology, 24/7 levels of IT service and quality assurance, and academic



change-management experience. These additional resources place serious demands on capital budgets, support staffing, and continued staffing for other ongoing needs. Partnering has thus become a cost-effective and results-focused strategy for achieving a mission-critical ROI in technology—in “Internet time.” Indeed, another paradox of the Internet is that the same online communication and transaction technologies that make it easier for higher education competitors to enter an educational market also make it easier for institutions to partner for services, sometimes even with a competitor! The result is that interinstitutional partnerships and partnerships with the for-profit sector have increased in importance and acceptance as a strategy.<sup>7</sup>

### Conclusion

In an article several years ago, I noted that higher education is in the throes of “random acts of progress” in terms of using technology to improve its performance in educating students.<sup>8</sup> There remains some truth to that observation, but it does not

do justice to the growing number of success stories, including those summarized above and also the recipients of the EDUCAUSE Award for Systemic Progress in Teaching and Learning.<sup>9</sup> These non-profit organizations and their leaders understand why, when, and how to redesign traditional governance, financial, and service-delivery models to take advantage of technology. They are infusing IT into various aspects of the educational process, thereby creating new educational wealth while also improving their reputation for service in the increasingly competitive learning economy. They are creating value by focusing IT resources on measurable strategic goals and are, in the process, proving that information technology can be a powerful lever for increasing enterprise ROI from the perspective of their governing boards. *e*

### Notes

1. Computer Science and Telecommunications Board, National Research Council, *Information Technology in the Service Society* (Washington, D.C.: National Academy Press, 1994), 3–4.

2. Carol Twigg, “For Whom the Bell Tolls,” *The Learning Marketplace*, May 1, 2002, <<http://www.center.rpi.edu/LForum/LM/May02.html>> (accessed May 21, 2002).
3. Walter B. Wriston, *The Twilight of Sovereignty: How the Information Revolution Is Transforming Our World* (New York: Scribner, 1992), 19.
4. A gratis copy of Clifford Adelman’s report, *Parallel Postsecondary Universe: The Certification System in Information Technology* (2000), is available by following the Publications and Products link at the Department of Education Web site (<http://oeri4.ed.gov/>) to the DoE’s Ed Pubs On-Line Ordering System.
5. Charles A. Goldman, Susan M. Gates, and Dominic J. Brewer, “Prestige or Reputation: Which Is a Sound Investment?” *Chronicle of Higher Education*, October 5, 2001, B13–B15.
6. The Center for Academic Transformation Web site (<http://www.center.rpi.edu>) abounds with case studies from the Pew Grant Program in Course Redesign and with white papers on related subjects.
7. Ann Hill Duin, Linda L. Baer, and Doreen Starke-Meyerring, *Partnering in the Learning Marketplace*, EDUCAUSE Leadership Strategies Series, no. 4 (San Francisco: Jossey-Bass, 2001); William H. Graves, “Virtual Operations: Challenges for Traditional Higher Education,” *EDUCAUSE Review* 36, no. 2 (March/April 2001): 46–56.
8. William H. Graves, “The Instructional Management Systems Cooperative: Converting Random Acts of Progress into Global Progress,” *Educom Review* 34, no. 6 (November/December 1999): 33–36, 60–62.
9. Information on this award (including a list of past recipients) can be found at <<http://www.educause.edu/awards/tl/tl.html>>.