The Learning MarketSpace, November 1, 2000

THE SILLY SEASON

It's the silly season again—that month before the general election when the airwaves are full of political commercials on behalf of congressional and presidential candidates. Setting aside the negative or "attack" ads, each candidate is attempting to encapsulate his or her solution to a local or national ill with a fifteen-second sound bite. Sadly, or happily, depending upon your level of optimism, many have turned their attention this year to education.

There is a common theme this election year. All the candidates seem to believe (or think the voters believe, so they patronize us) that the cure to our educational problems is smaller class sizes. To be sure, they are primarily focused on K-12, but the theme is the same for all forms of education. Smaller class size will lead us back to those halcyon days of quality education.

The first rumblings of a "crisis" in education occurred over a quarter of a century ago. That was back before the Dow Jones quadrupled, unemployment virtually disappeared, and productivity, fueled by information technology, reached unparalleled heights in most business enterprises. Our candidates don't appear to want to connect what drives our economic prosperity with our schools. They seem to miss the obvious that education (even more so than health care) has been a laggard in the application of information technology to its various enterprises.

Instead, they propose a solution that is labor intensive in an incredibly tight labor market. Fifty years ago our K-12 schools reaped the benefit of a society that offered few employment opportunities for bright young women other than as teachers in primary and secondary schools. The pay was mediocre but the perks and prestige were reasonable. The intervening half a century has changed all that. High-prestige, high-paying jobs are available to bright young women in all businesses and professions. The captive labor market of the 1950s is no more.

To attract the best and the brightest, what do we do? Microsoft, like tens of thousands of other businesses, offers high pay, stock options, attractive and flexible working conditions and a host of other job perks from corporate day care to on-site fitness centers. And what do our schools offer? Subsistence pay, low prestige, long hours, deteriorating physical plants and a host of other negatives.

In higher education there are still many institutions that promote a "small-class-size" agenda. Many of our finest liberal arts colleges are among them. One can argue that the nature and quality of education in them is not much different than it was 50 years ago. What is different, however, is the price. These highly labor-intensive educational endeavors cost 6 to 10 times as much as the local state university or community college. Typically, tuition and fees amount to about half the median family income in the state in which they are located. These institutions represent an economically viable option for only a very small portion of the population seeking post-secondary learning experiences.

Other types of higher education institutions have attacked the labor-intensiveness problem by use of graduate teaching assistants and adjunct faculty (reduced payroll costs) or by large lectures (reduced faculty requirements). Still others have begun experimenting with forms of self-paced learning in studio environments or, increasingly, in some Web-enabled learning environment that may provide a mixture of faculty lecture/discussion and self-paced learning. What is clear is that the only route to avoid $20,000-a-year tuition is to find some alternative to small classes taught in the conventional manner.

So why are our politicians promoting a "solution" to our ills that seems certain to bring with it a set problems that will be worse than those they set out to solve? If our current teachers are generally not of the quality we desire because of low pay, how will making more hires from the bottom of the labor pool improve our situation? If a year's high school "tuition" for an inner-city student is already two or three times the cost of a year's tuition at the local community college, how will further increasing those costs help? Laying aside the sarcasm about their motivation, which is increasingly difficult to do, we have to conclude that most of our politicians are both misand ill-informed.

As to higher education, most politicians appear to have little if any realization that only about a quarter of our
student bodies are full-time, residential students. Unfortunately, the same criticism can be leveled at many within the academy itself. Few appear to recognize the demands that a labor force in need of constant re-skilling imposes on our institutions of higher learning. Most likely none of these politicians have ever looked at the copious literature dealing with student learning and alternative learning strategies.

Undoubtedly, the residential campus environment is an important experience for many in the 18 to 22 year old demographic. No one—at least not any one that I know—suggests we should dispense with it. But equally, if not more, important to our society is the group of post-secondary learners, three to five times as large, who find that the demands of a residential experience seriously inhibit, if not altogether prohibit, their access to education.

Even for the residential student, alternative-learning strategies that take advantage of the power of information technology can significantly enhance both the speed and the retention of learning. Not incidentally, application of these technologies can also reduce the cost of instruction. Better retention, faster accomplishment and reduced costs—what's not to like? Why do we have politicians proposing equal retention, equal time to accomplishment and higher costs?

It's the silly season.

—RCH

WHAT HAPPENS TO THE SAVINGS?

While politicians continue to advocate Industrial Age solutions to Information Age education problems, pioneering faculty around the country are discovering ways to reduce instructional costs while improving both the quality of student learning and professional satisfaction.

Two rounds of the Pew Grant Program in Course Redesign have demonstrated conclusively that information technology can be a powerful tool in reducing the labor-intensive nature of collegiate instruction. The average cost-per-student decrease for the 10 projects involved in Round I is about 40 percent, which is identical to the projected cost-per-student reduction for the recently announced Round II projects. The total dollar savings is projected to be $1,419,000 on an annual basis for the Round I projects and $1,157,000 for the Round II projects. Those are significant numbers, especially when you consider that we are talking about only 20 courses.

Now that a significant number of institutions are demonstrating that they can, in fact, improve quality and reduce costs simultaneously, the following question understandably arises: What happens to the savings generated by these redesigns?

What many of the institutions involved in the Pew project have in common is that insufficient resources prevent them from doing all of the things they want to do. These redesigns free resources that have been absorbed in traditional formats to be used for other purposes such as developing new programs, serving more students or redirecting resources to areas of pressing need. Here are a few examples.

For many institutions, a lack of resources keeps them from serving all of the students who want to take a particular course. By using technology to reduce the amount of time that instructors have to spend on the course (thus lowering the cost per student), institutions are able to serve more students. At the University of Illinois at Urbana Champaign, for example, the demand for Spanish language courses far exceeds actual enrollment, primarily because the ability to staff these courses is limited by the lack of qualified instructors. With support from the Sloan Foundation, UIUC has redesigned its Intermediate Spanish course using Mallard, an intelligent program developed by UIUC for doing automated student assessment on the Web. Vocabulary and grammar exercises are submitted and graded electronically, thus enabling section size to double from 19 students to approximately 38 students. Use of information technology is enabling the university to break through a significant academic bottleneck.

At Penn State, the Elementary Statistics course requires twelve graduate teaching assistants (GTAs) each semester in its traditional format. This requirement presents a problem for the department because it is difficult to identify, much less allot, this many qualified assistants for the course. Most graduate students in statistics have undergraduate degrees in mathematics or a scientific discipline, limiting the effectiveness of the statistics instruction they can provide. Penn State’s redesign plan calls for reducing the number of required GTAs from twelve to six; preliminary results from the pilot phase suggest that the number can be further reduced to four.

The redesign involves reducing lectures from three to one per week, changing traditional recitation sections to computer-mediated workshops, adding technology-based independent learning materials and computerized testing to give students more practice time and feedback, and shifting instructional roles from information presentation to learning facilitation. Redesign will result in a 30% reduction of the cost-per-student from about $176 to $123. Because this course enrolls 2,200 students per year at the University Park campus alone, this translates to annual savings of at least $116,600 that can be used for other purposes.

At the University of Southern Maine, the psychology department has nine full-time equivalent faculty positions, 2.17 of which are devoted to teaching Introductory Psychology, thus creating a drain on faculty resources. The university’s redesign calls for increasing the number of students per section in from 75 to 125. Lecture time is reduced by half, and that time is replaced by interactive Web-based learning activities and increased individualized attention to students by instructors. Redesign will result in a planned 49% cost-per-student
reduction from $113 to $58. The faculty resources that are freed are being re-deployed to develop distance-learning courses that attract additional revenue to the university while improving service to the state’s citizens. Without the redesign, Southern Maine’s psychology department would have been less able to embark on this new venture.

Virginia Tech’s redesign of its Linear Algebra course replaces the 40-student multiple section model with one large course structure. VT’s Math Emporium, a 500-work station computer lab, staffed by faculty, teaching assistants and undergraduate peer tutors who provide one-to-one assistance, serves as the site for both this new course and a host of other math courses. A Web-based resource system (interactive tutorials, computation examples, an electronic textbook, and online quizzes) increases student feedback and allows 24 x 7 access to course materials. Redesign has reduced the cost-per-student from $77 to $24, resulting in a projected annual operating cost savings of $97,400. These faculty resources have been re-directed to advanced mathematics courses where smaller, more intimate student-faculty interaction is a requirement. Virginia Tech’s math department is using information technology to deploy their instructional resources both strategically and differentially rather than taking a one-size-fits-all approach to course design. In the second round of the Pew program, the University of Idaho and the University of Alabama are replicating the basic design of the Math Emporium with very different student populations.

The rapidly growing University of Central Florida is facing resource demands from a different direction: the need for lots of additional classroom space. In order to address this need and to improve student performance and retention, the university is redesigning American National Government by substituting Web-based, asynchronous, modular learning for two-thirds of the in-class time. More efficient use of 100-seat classrooms in the redesigned course configuration and increased student retention means that fewer sections will need to be offered to accommodate the same number of students per year. This amounts to annual savings of $69,255 that can be re-directed to other purposes.

The University of Southern Maine is also taking advantage of reduced seat time by scheduling two classes into one traditional time slot on their otherwise completely booked distance education ITV system. In effect, the university can anticipate twice the revenue when such seat-time reductions can be arranged. Like UCF, Southern Maine is actively encouraging faculty teaching on the ITV system to consider using this mode of instruction.

It probably won’t surprise you to know that the faculty members leading these projects are motivated by improving the quality of the student experience, not by reducing costs. Finding ways to improve student learning and gain greater professional satisfaction is where the faculty put their attention. But they are also learning that meeting those goals does not require increased costs, that thoughtful redesign based on effective uses of information technology points the way to solving the cost-quality-access problems facing American higher education. Perhaps they should considering running for office!

—CAT

[To learn more about these exciting new designs, plan to attend the State-of-the-Art Learning Environments workshop described below.]

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UPCOMING LEADERSHIP FORUM EVENTS

STATE-OF-THE-ART LEARNING ENVIRONMENTS: PEW GRANT PROGRAM IN COURSE REDESIGN
ROUND I RESULTS

November 13, 2000, Orlando, Florida
February 26, 2001, Dallas, Texas

Co-sponsored by the Executive Forum in Information Technology at Virginia Tech

This seminar will present the results of the first of three rounds of the Pew Grant Program in Course Redesign. Learn from faculty project leaders how to increase quality and reduce costs using information technology. Faculty from four institutions will talk about their models of course redesign, including their decisions regarding student learning objectives, course content, learning resources, course staffing and task analysis, and student and project evaluation. These models provide varied approaches that demonstrate multiple routes to success, tailored to the needs and context of each institution.

These seminars provide a unique opportunity for you to:

- Learn firsthand how to increase quality and reduce costs using information technology from successful faculty project leaders.
- Find out how to design learning environments for the future by tapping the expertise of those who have done it.
- Talk with experienced faculty from multiple institutions about how and why they made their redesign decisions.
- Move beyond “today” and learn where on-line learning is going... find a model that will work for your institution.

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