Changing the Subject: Costs, Graduation Rates, and the Importance of Re-engineering the Undergraduate Curriculum

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February 2010

A palpable edginess now swirls about much of higher education. While business as usual still holds sway—at least most of the time and in most institutions—the specter that haunts is a future of escalating risk: for public institutions more, perhaps even draconian, budget cuts; for private institutions new worries about where their students are going to come from and whether those students can continue to afford the tuitions they must charge; and for the nations' richest and most selective institutions a humbling sense of false pride and broken promises.

Not surprisingly then, just two issues now dominate discussions of higher education: costs and outcomes. American higher education today is an expensive enterprise that frequently lacks both the will and the know-how to do things differently. It is also an enterprise in which an embarrassingly large number of students start but do not finish a baccalaureate education—that, and the fact that completion rates all too often track the wealth, location, and ethnicity of enrolled students.

What does surprise us, however, is the fact that these two concerns—escalating costs and disappointing attainment rates—have long been treated as separate issues. It is a division of responsibility as well as blame that mirrors higher

education's view of itself as having a hard side where monies are concerned and a softer, more nurturing side, when helping students achieve their academic ambitions.

Over the last year we have increasingly come to ask: are we sure these concerns have either separate causes or separate consequences? Is it not possible that controlling costs, encouraging more adaptable and nimble institutions, and achieving higher graduation rates each requires the same rethinking of a collegiate production function that has become both too expensive and too cumbersome to achieve the academic purposes for which it was originally designed?

... and Spend All the Money They Raise

Since the 1980s, the dominant explanation for how and why universities cost so much has been Howard Bowen's telling observation that "universities will raise all the money they can and spend all the money they raise." The way to excellence and reputation lies principally in having more money to spend on the good things colleges and universities want to achieve. Just as clearly, the quickest and easiest way to make colleges and universities cost less is to starve them of revenue—a proposition that the recession and state budget shortfalls are now testing with a vengeance.

Given the near absence of new monies and the looming presence of more economic bad news, higher education's leaders have come increasingly to portray themselves as being caught in what John Immerwahr of Public Agenda has described as an "Iron Triangle." Somehow they must find ways to simultaneously control costs, increase quality, and improve access—and that, they argue is simply not possible.

State policy makers, less persuaded by the presidents' arguments and newly frustrated by their universities' reluctance to change, have begun to experiment with strategies that use the power of the public purse to exact greater efficiencies on the part of their states' public systems of higher education. And yet the result can best be described as an operational cul-de-sac. Rhetorical tough love hasn't worked. Budget incentives have not yielded re-engineered educational processes. Reducing state appropriations, along with limiting tuition increases, have yielded public colleges and universities that spend less money without becoming either better or demonstrably different. Salaries can be reduced, positions left unfilled, perks and amenities eliminated, all without impacting the basic production functions that shape the enterprise's teaching and research missions.

The Tragedy of the Commons

It is this dismal prospect that has led us to search for a different set of strategies for controlling and perhaps even lowering the cost of a college education. Here, the question we asked ourselves was simply, what costs the most money? And our answer: the curriculum!

We start then with the curriculum, invoking a concept economists use to illustrate how perfectly rational actions on the part of individuals can, when summed, produce unintended and devastating consequences. The "tragedy of the commons" tells the story of what happens when a community-owned pasture (or commons) is at or near its capacity in terms of the size of the herd that can be fed without destroying the pasture itself. Even then it remains in the interest of each farmer to increase the size of his own herd since he, like each of his neighbors, has a

right to feed all the cattle he acquires on the same pasture where his, as well as his neighbor's cows graze. The problem occurs when the total number of animals exceeds the pasture's grazing capacity and the pasture begins a near irreversible cycle of decline. For economists, the moral of the tale is that a perfectly rationale act (the individual sending just one more animal to graze on the commons) can have a devastating impact on the system as a whole (the withering of a productive pasture).

In many ways the dilemma now facing higher education reflects the tragedy of the commons. Three decades of constantly adding new programs and more choices to the undergraduate curriculum have yielded colleges and universities that are economically unsustainable and educationally dysfunctional. To understand how this came to pass, we need to revisit a piece of curricular history that dates back to the 1960s. Sparked by student revolts in Europe and a wave of student-led political protests in this country, American colleges and universities responded by granting students more personal freedom and by adopting curricular changes that reduced both general education and graduation requirements. In time, the faculty, who had at first opposed student demands that they be allowed to "do their own thing," discovered that what was good for the goose was even better for the gander. Few faculty enjoyed grading senior theses or comprehensive examinations, or teaching the required course sequences that comprised many major and pre-major programs at most institutions.

What took hold was a laissez-faire environment in which nearly every possible subject was admitted to the collegiate curriculum, provided the new course

was taught by a fully qualified member of the faculty. Whole new disciplines and concentrations were similarly added, often in response to demands that full recognition be granted to specialties that previously had been considered outside the accepted canon. At the same time, except in the sciences, most courses became stand-alone experiences not requiring prerequisites or, in fact, much if any coordination among the faculty who taught similar courses in the same department or discipline.

For those of us on the faculty the lessening and then the elimination of most requirements proved a bonanza. We could teach what we wanted—principally our own specialties—when we wanted, without having to worry too much about how or what our colleagues were teaching. Each course became a truly independent experience and our principal responsibility was to absorb our fair share of the enrollments, thus ensuring our department would not lose valuable faculty lines.

For students, this commitment to unfettered curricular choice proved more than appealing—a chance not only to do their own thing, but to change their minds, not just once but frequently. The curriculum became a vast smorgasbord of tempting offerings. Faculty seeking to insure adequate enrollment were careful to tailor their requirements and expectations to meet student tastes. Students could design their own majors and concentrations. But as has become increasingly obvious, too many students also got lost, unsure of what it took to graduate, on the one hand, or, on the other, unsure as to what was actually being asked of them in terms of either subject mastery or learning skills.

Institutions faced even greater problems—and here is the core of the financial side of our argument. The more open-ended the curriculum became—the more faculty and students were free to set their own schedules—the more resources, both financial and human, the institution required to meet its educational obligations. Adding more courses and majors to the curriculum forced the institution to spread its current faculty resources ever thinner, to increase the number of full-time faculty, or, as has proven most often the case, to hire more adjunct faculty.

The result was an almost endless series of undergraduate curricula in which "almost anything goes." That observation was supplied by the Association of American Colleges (AAC)'s *Integrity in the College Curriculum: A Report to the Academic Community* (1985) that went on to complain, "We have reached a point at which we are more confident of the length of a college education than its content and purpose." Two decades later AAC'S successor organization, the Association of American Colleges and Universities (AAC&U), would observe that not much had changed. In it's report *Greater Expectations: A New Vision for Learning as a Nation Goes to College* (2002), AAC&U called upon colleges and universities to better integrate the separate curricular elements "into purposeful plans of study for every student." Carol Geary Schneider, AAC&U's president, summed up her organization's hope when she characterized *Greater Expectations* as calling for "nothing less than radical and comprehensive change in the way our institutions of higher education carry out their missions."

And still not much has changed. As in the case of calls for greater efficiency and the more parsimonious expenditure of public funds and tuition receipts, the challenge was heard, rhetorically responded to, and then largely put aside. The fragmentation of the undergraduate curriculum continues apace, just as it did following the publication of *Integrity in the College Curriculum.*

And as before, worries about the escalating cost of an undergraduate education, on the one hand, and, on the other, the large numbers of students who begin but do not finish a baccalaureate education remain separate concerns. Those who focus on costs talk about outmoded work rules including tenure, presidential salaries and perks, the avariciousness of athletic departments, and higher education's commitment to research always trumping its commitment to teaching. Those who worry about the curriculum continue to focus on its fragmentation, on a corresponding devaluing of the liberal arts, and on the continued sense, to use *Integrity's* phrase, that "almost anything goes" when it comes to approving new courses, new majors, even new disciplines.

Re-engineering as the Solution

The way out of this box, we believe, is to re-engineer the curriculum to productively constrain both student and faculty choice. We would start by having students choose not among an expanding menu of courses, but among a much shorter list of curricular pathways—that is, an ordered sequence of courses linked together by faculty design. This curricular structure would yield a much more efficient match between student needs and institutional resources. There would be

fewer under-enrolled courses and not so incidentally more courses taught early in the day as well as on Mondays and Fridays (perhaps even on a Saturday morning).

We would also use a cohort model in which sets of students take most, perhaps even all of their courses together. Faculty responsible for remedial and developmental educational programs using a cohort model report important learning advantages leading to substantial increases in student attainment. At the University of Pennsylvania we teach in a graduate program that employs a fixed curricular pathway (no electives at all) and a cohort model in which peer learning is a constant and faculty discussions of what and how each of us is teaching occur regularly.

Several other innovations would be made more likely by this restructuring of the curriculum. A re-engineered curriculum that employs well-defined pathways through the curriculum could also award credit for demonstrating competence in the subject without having the student sit through a particular course. In general we believe a re-engineered curriculum could take greater advantage of technology, both to achieve better learning outcomes and to verify that specific competencies have been mastered. Here the work of Joel Smith, and his colleagues at Carnegie Mellon, and Carol Twigg, President of the National Center for Academic Transformation, will prove particularly important. In the process of recasting the curriculum it should also be possible to take greater account of the large numbers of students who will earn their undergraduate degrees while attending several, rather than just one, undergraduate institutions. Finally, it is even possible that such a curriculum would allow students to graduate in three rather than four years.

The kind of reform we have in mind has one final distinguishing characteristic—it cannot be accomplished without full faculty engagement. Only the faculty can design the curricular pathways we have in mind—a lesson that those who constantly prattle about greater efficiency and more learning productivity need to keep in mind.

A Testable Proposition

How then to test our central proposition? It is possible to test statistically whether the curricular structure we have proposed would result in fewer under-enrolled courses as well as fewer courses overall and thus prove less costly, provided current faculty teaching loads remain constant. It is also possible to demonstrate statistically that the curricular structure we have in mind will allow a publicly-funded institution to increase enrollment without requiring an increase in state appropriation. The two key questions on which the success of the reform we are proposing rests, however, are not answerable using traditional research methods.

Without working directly with a set of institutions committed to adopting the proposed curricular change we will not know whether or not a re-engineered curriculum would produce higher graduation rates. Testing whether faculty, either individually or collectively, would provide the necessary curricular design the innovation requires will similarly require working directly with faculty in real time. Neither interviews nor surveys will provide the necessary assurance that the faculty are fully engaged in re-engineering the undergraduate curriculum.

Phase 1: Planning and Organization

Launching a major demonstration project involving three complex public higher education systems will, in itself, require extraordinary planning and coordination. The fact that the project involves re-engineering the undergraduate curriculum, and introducing curricular pathways to supplant the traditional menu approach for laying out undergraduate options and requirements, makes the task that much more difficult. Initially there will have to be extensive consultation within and across the three systems—detailed meetings with the central administration of each of the systems, the presidents of the individual institutions, the leaders of the faculty governance structure, and certainly the elected leadership of the bargaining units representing the faculty. A second round of meetings in which participants from the three systems are brought together to compare and contrast approaches, obstacles, and possible solutions will need to follow.

Two other important groups responsible for the quality and effectiveness of higher education systems will need to be consulted as well: the legislative and executive agencies in each of the three states, and the accrediting agencies responsible for overseeing the quality of undergraduate institutions in their region.

Toward the end of this planning and organization phase the project's senior leadership will meet with and interview faculty groups on at least fifteen campuses (five per participating system). Here the prime question to be asked is how might the faculty organize the kind of curricular pathways that are at the core of our proposed re-engineering of the undergraduate curriculum. At this stage, detailed curricular proposals will not be sought. Instead we will focus on the faculty

aspirations and attitudes that will be needed to later produce specific curricular designs.

At the conclusion of this first phase, the project's senior leadership, including representatives from each of the three public systems of higher education, will need to assess whether the project should proceed to first the design and then the implementation of a re-engineered undergraduate curriculum, in which curricular pathways supplant the standard menus that now define patterns of course selection and requirements for graduation with a baccalaureate degree.

Phase 2: Curricular Design

Designing the requisite curricular pathways will begin with a focused discovery effort detailing just how students and faculty across the three systems organize their learning activities and environments. First will come a design process involving faculty, administrators, staff, and students across a wide variety of institutions within each of the participating systems. Penn's Institute for Research on Higher Education (IRHE) has a record of conducting successful campus roundtables that can elicit both faculty and student opinion and result in written documents that then become the starting point for future action. The National Center for Public Policy and Higher Education (NCPPHE), often working in conjunction with IRHE, has similarly used roundtables to test ideas as well as bring different, often competing interests to the same table.

The product of this design process will be a limited number of potential curricular pathways defining what a re-engineered, more coherent curriculum might look like. Here it is vital that the potential curricular pathways reflect the

actual values and expectations of the faculty and students in the participating institutions.

Next the project team will develop a series of statistical analyses designed to ask two questions of the potential curricular pathways: will they likely yield the kind of cost savings required; and, given student expectations and needs as reflected in current patterns of course taking and majors, will a specific set of curricular pathways prove attractive to an institution's likely student population? Here the project will draw on analytic methodologies first developed by IRHE in support of a 1986 AAC project statistically verifying *Integrity in the College Curriculum's* critique of the nation's undergraduate curricula. For that effort, jointly funded by the National Science Foundation and the National Endowment for the Humanities, IRHE developed a curricular database comprised of the college transcripts of more than 50,000 undergraduates, who had graduated from 32 colleges or universities in either 1986 or 1987. The supporting software asked simple questions of this treasure trove of curricular data. Was there evidence of both breadth and depth in the transcripts? Did students proceed along ordered or sequential pathways? How many courses had prerequisites? Did most of the freshmen, for example, take their courses with other freshmen or was there a diversity of experience in their first-year courses? The project's goal will be to develop a parallel curricular database with complete transcripts for all students graduating from a participating institution with a baccalaureate degree in 2009.

At the same time the project team will develop a series of expenditure analyses documenting the direct and indirect costs supporting undergraduate

education at the participating institutions. Using the curricular database and the newly designed curricular pathways, the project team will be in a position to estimate the likely expenditures necessary to deliver the proposed curricular pathways. The project will also draw on important new work by Jane Wellman, and her colleague Nate Johnson, at the Delta Cost Project. They are developing databases and analytic techniques which indicate that attrition, plus the excess credits students find themselves taking, add as much as 50% to the cost of a college degree.

This phase of the project will conclude with a second set of institutional roundtables whose principal purpose will be to examine the findings and likely consequences of data analyses and proposed curricular pathways.

Phase 3: Trial Implementations

Phase 3 of the project will likely prove the most difficult as well as ambitious. Up to three separate institutions in each of the three participating systems will start the process of implementing one of the curricular designs developed and initially analyzed in Phase 2. Two questions would have to be answered at the outset of actual implementation of a new curricular structure. First, what role would the institution's accreditor be expected to play? Second, would the institution be able to commit to the kind of top-to-bottom refit necessary to fully test whether or not the new curriculum is educationally sound and successful, and, at the same time, less expensive to operate? Here the key players will be both individual faculty and the bargaining units they have chosen to represent them. Institutions participating in this phase will also require substantial financial and management support given the

likely difficulties that will be encountered implementing a fundamentally different curricular structure.

Phase 4: Evaluation and Assessment

The final phase will also draw principally on the energies and resources of the participating systems and institutions. The project promises two measurable outcomes: an educationally sound curriculum that is more efficient and costs less to deliver; and an educational program that both encourages and makes it possible for more students to graduate on time. Within five years of the implementation of the re-engineered curriculum the participating systems and their participating institutions ought to have clear answers to both questions. The final test of the project's success, however, will be whether or not each participating system—as a whole or significant parts—adopts the new curricular structure and attendant modes of operation developed and tested in the demonstration phase of the project.