

A Cornell Strategy for Distance Learning: Conceptual Issues

**J. Robert Cooke
Dean of the University Faculty
3 November, 1999**

Executive Summary:

Interest in distance learning is sweeping through higher education. In this essay I propose a conceptual framework to guide Cornell's efforts and invite faculty comment and assistance in its refinement.

The main ingredients are

- 1) to concentrate primarily upon Cornell's greatest asset, the content expertise of its faculty, rather than upon the technology infrastructure,
- 2) to focus on 'wholesale', rather than 'retail' delivery of services to end-users, and
- 3) to commit to serving the lifelong educational needs of our alumni as a primary audience.

This proposal emphasizes multiple economic goals:

- generation of an alternative income stream to slow tuition growth which has become the University's dominant revenue source, and
- creation of employment opportunities for emeritus faculty and spouses of faculty and supplemental income for faculty

Equally important, this proposal outlines an approach that circumvents some otherwise debilitating political obstacles to faculty acceptance of distance learning.

I shall describe in skeletal form, a distance learning strategy for Cornell that I believe addresses the use of information technologies in a manner that furthers the purposes of the University while remaining consonant with the strengths and interests of the Faculty. I offer this proposal to stimulate faculty discussion in order to help us define a rational response to the enormous opportunities presented by this rapidly emerging technology. I'm placing this opinion piece on the University Faculty website's On-Line Forum to stimulate a campus-wide discussion in order to seek advice on improvements.

The information revolution already in progress will fundamentally change higher education, including Cornell. Even if we tried to remain indifferent, our future will be affected in fundamental ways. However, we have not been indifferent, nor do we wish to become passive observers of this revolution.

Members of the faculty have pioneered in distance learning efforts already. Numerous initiatives are underway – at individual, college and university levels. The Office of Distance Learning has nurtured many projects and has produced a Task Force Report¹. Last December 9 several hundred faculty members participated in an Academic Leadership Series² to explore distance learning. The ideas proposed there were further developed by a small group of individuals (David Lipsky, Jon Levy, Paul Velleman, Dan Huttenlocher, H. Dean Sutphin, and myself) throughout last semester. A Trustee Task Force on Distance Learning is developing a report.

I'll now share with you a strategy that draws upon, and I hope, reflects and is consistent with all these discussions.

General Expectations of the Faculty for a Cornell Distance Learning Initiative

As we explore potentially fundamental, even revolutionary, changes at Cornell University, certain conditions must be observed:

- **'First do no harm'** is good advice not only for the medical profession, but for our educational programs too. We have a highly valued reputation for leadership and service in undergraduate and graduate education. Preserving and enhancing that 'brand name' is crucial to our future as a leader in elite higher education. Whatever initiatives we undertake in distance learning must not diminish the quality of the current program nor the internal or external regard for this core mission. In fact, we must assure that our distance learning efforts enhance our existing mission. Below I'll describe some examples of this potential synergy.

- **Faculty participation must be voluntary.** High standards of excellence and productivity emerge from the faculty's embrace of individual autonomy – freedom with responsibility. Excellence flows more readily from faculty initiated projects, than from externally imposed tasks. We became members of this faculty to teach

¹ http://www.ipr.cornell.edu/ALS_Web/ALS_NewHighlights.HTML

² http://www.ipr.cornell.edu/ALS_Web/distance_learning_resource.htm

Cornell undergraduate and graduate students – not those at other colleges and universities nor other nontraditional audiences.

However, a few members of the faculty have long had responsibility for educating older, non-resident persons, but the existence of the Internet provides a strong new incentive and opportunity for an expansion of such activities. Distance learning will and should broaden the class of those whom we serve. We should now resolve to broaden the scope of institutional service. There are compelling reasons for us to contemplate major change.

- **We must generate new sources of income.** Aside from our service obligation to society, we have a pressing financial problem that must be addressed. If we are to sustain our current residential educational model into the future, we must find a way to curtail the relentless growth in tuition that is driven by the need to fund our highly valued, but labor-intensive approach to education. We simply cannot sustain indefinitely the path we're following without some fundamental change. This should not compromise, but should help us sustain our current residential model of education. Quite simply, we must find a major new revenue stream to permit a more sensible rate of tuition growth so we can supplement faculty salaries that are growing too slowly.

- **We should utilize our existing strengths in a constructive manner.** We have a world-class, research university faculty, whose members bring great content expertise to their assignments. Many, but not all faculty, have interests in information technologies and a desire to serve broad state, national or worldwide audiences in addition to the residential students.

This brings me to three organizing themes for our effort:

- 1) **We should choose to establish a Cornell identity as the premier national source for graphically rich, interactive 'digital textbooks' for the next generation.** In the language of the corporate world, we should become the wholesale, not retail, supplier of content. At least for the short term we should emphasize investments in content³, rather than for either the rapidly evolving technological infrastructure needed for delivery to individual users or the human resources required to nurture end-user interactions distant to the campus.
- 2) **As a core value in our commitment to remain an elite research university into the next century, we should make a commitment to all our graduates to serve their lifelong educational needs⁴.** We should make this commitment a centerpiece of our expected long-term relationship with them as well as a fundamental reminder that their Cornell experience will benefit them

³ Donald Greenberg, op cit.

⁴ Kenneth M. King op cit.

throughout their lives. Over time this will expand significantly our traditional outreach to the people of the State of New York, the nation, and the world. This audience is well known and respected by the faculty.

3) We should commit to establishing the highest standards of excellence as our hallmark. We must protect and enhance our reputation and ‘brand name’.

The technologies needed to support a high-quality distance learning effort are expensive and short-lived in this emerging phase. If we focus upon content, we can slow the rate of investing in infrastructure for audiences beyond campus until the technology matures. If we focus faculty efforts on content, all members of the faculty become potential contributors. Furthermore, we can remain focused on student-faculty interactions on the Cornell campus and need not create massive, new demands upon faculty time.

Numerous content delivery issues must be considered. Fundamental to effective usage of this technology⁵ is a re-orientation from the traditional lecture format that presumes a passive student and a content delivery rate that is not adjusted for each student to one that is highly individualized and highly interactive. Unlike previous generations of mass media technology, the new generation of ‘interactive textbooks’ must exploit the capability to respond to individual differences.

This means that we must not succumb to the temptation of producing a ‘cheap’ translation of existing course formats such as lectures that have become the staple of contemporary higher education⁶. We must re-think our pedagogical approach in order to capture the power of a more interactive approach to both teaching and learning that contemporary technology now permits. One obvious issue will be the relative emphasis we place upon deductive and inductive reasoning. We often emphasize the process of going from a general theory to a specific result with little attention to the discovery process involved in generalizing from multiple, more easily grasped examples, to a generalized understanding. Using the computer’s processing power to reduce computational tedium will allow the discovery approach to be used more successfully. Passive learning simply isn’t as effective as active learning.

Likewise, one should not assume that entire courses should be the basic organizational structure. Creating modules or shorter supplementary units taken collectively to define a course are likely to be a more logical transitional measure. This also has the advantage of creating materials that can be more easily incorporated into the traditional teaching environment too. This approach provides an additional factor of safety – even if the external market for a particular module doesn’t materialize, the residential Cornell students will benefit. One might even argue that the residential student should be the primary audience and the external audience secondary.

⁵ Paul Velleman. op cit.

⁶ Geri Gay, op cit

As with the traditional print publishers, a few large, required introductory 'interactive textbooks' may become the staple of the digital press too. We might concentrate on creating enhancements to established standard textbooks for these mass markets or create fundamentally new, interactive, graphically rich 'textbooks'.

Given the expanded ability to share content via the Internet and specifically the ability to serve many advanced, specialized audiences more easily, the opposite end of the specialization spectrum will become attractive as a market for Cornell. At last we may be able to find an economically sensible justification for our numerous low enrollment specialty courses. Because of the breadth and depth of the faculty's research base, we surely have (and can create) digital textbooks for courses whose local enrollments mean that traditional (paper) textbooks are prohibitively expensive due to the small production runs. On-demand printing⁷ has already been demonstrated to be an economically viable approach to customized course packs; already such locally produced materials account for 13% of the Campus Store's textbook sales. The inherently smaller audiences for these specialized courses will limit the economically justifiable investment in production costs. But the massive number of advanced, specialty seminars that already occur on campus could become a rich source of material.

As a corollary of a content focus, we will be freed of the responsibility of assuring that the delivery to the end-user meets Cornell standards. The awarding of course credit and conferral of degrees can be separated and delayed until we have mastered this new paradigm. Furthermore, the University Faculty will not be forced into a defensive stance with respect to its responsibility for quality assurance of courses at other institutions; they will not be awarding 'Cornell credit' to students who have not, and perhaps could not, meet the high admissions standards required of students in Cornell degree programs.

Perhaps, even probably, some parts of the university will choose to make the long-term commitments needed to create and deliver high quality services and degrees to end users for highly specialized, well-funded audiences for premium costs. But we need not rush into that general market, and importantly, we need not obligate the entire university for a massive, long term commitment for a full complement of courses or achievement certification process required to sustain degree programs.

Not only is the infrastructure expensive, but so are the human services needed to make current technology delivery viable and successful. If we concentrate upon content, we need not invest in the end-user teachers needed to provide human interaction for encouragement and feedback. Rather, if we provide the content upon which other institutions build their efforts, we may generate a major new source of funding for our graduate students who could become consultants with the faculty at other institutions who are using our materials.

⁷ Richard McDaniel of the Cornell Campus Store

At least in the near future the needs of many of our alumni could be served without providing credit or the burden of grading papers, except whatever interactive testing might be built into the interactive textbooks. Some exploratory efforts are already underway to provide enrichment and stimulating intellectual and avocational non-credit-bearing resources for our alumni.

The Cornell Cooperative Extension program shares many objectives with this proposed effort by the entire university, even if its current clientele only partially matches the audience discussed here. That statewide program should more aggressively address the opportunities presented by information technologies and the distance learning model herein proposed. With this infrastructure, Cornell Cooperative Extension could (and should) address a much-enlarged audience. It is conceivable that it could become the preferred publishing and distribution mechanism for the entire national Cooperative Extension system.

In summary, a wholesale focus will a) free us of responsibility for creating (or at least allow us to delay creating) an elaborate and expensive information technology infrastructure, b) allow us to minimize the demand on the Cornell faculty for the necessary human interaction with the end-users, and c) avoid, at least in the near future, the burden of certification for courses, modules or degrees.

Other Significant Issues

Cornell should create a free-standing, independently managed digital press to service this effort (and to include a responsibility for income generation to subsidize the current residential programs) and that of Cornell Cooperative Extension, ILR Extension, The Cornell University Press, etc. Our outreach efforts should share most of the technological and human resources.

The benefits are numerous:

- 1) The thorny issue of intellectual property ownership can be resolved on an ad hoc basis, rather than as a policy mandate. Cornell faculty are accustomed to negotiating with publishers, but not with the University. We can avoid a bitter and needless confrontation over institutional policy on intellectual property because the faculty would be negotiating with an independent publisher. Such negotiations must include considerations that will cause the faculty authors to agree to long term involvement to maintain the 'textbook' continual evolution. Unlike traditional publishing that remains unchanged for several years in each edition, there must be continuous attention and renewal.
- 2) The creation of media-rich, interactive intellectual property is very expensive to create so issues of ownership will require an explicit and upfront clarification of ownership issues and of the need for long-term involvement of the authors to assure the continual improvement and maintenance of the 'interactive

textbooks'. In short, each project will require substantial support, say up to \$500,000 to \$1,000,000 for large projects. To assure the level of initial and sustained faculty involvement, initial developmental support, maintenance support, and royalty commitment must be made at the outset. These issues must be resolved before – not after- work begins. And these issues can be resolved more easily on an individual basis than on a global policy basis. Traditional textbook writing has not required such massive financial support, but the interactive textbooks of the next generation will.

- 3) In the absence of a mandatory retirement age for tenured faculty, we must find attractive professional employment options to facilitate the migration of tenure line faculty onto term appointments that allow the faculty to maintain their professional identity and provide income, while allowing tenure lines to be recycled. [I believe the core issue for the faculty is the preservation of professional identity, rather than income enhancement.]
- 4) In rural Ithaca, we need to generate professional employment opportunities for spouses of faculty. We'll simply not be able to attract the best faculty unless we generate more and diverse professional employment opportunities. 'Creating' university employment for two hires at the same time can lead to suboptimal hiring choices. The Business and Technology Park with its airport location and motels nearby could grow into a major supporter of a robust distance learning effort. Some brief residential component should be anticipated – even if only to administer examinations and provide some minimal human contact between faculty and 'students'.

Significant Additional Opportunities

Options for our alumni: Our current and future students are destined to be employed in numerous jobs throughout their lives. The days of a single, lifelong employer as the predominate pattern have passed. Consequently, our graduates will have an increasing need for enrichment courses and for re-treading of their professional interests. Our near-term support for our alumni, with whom our faculty can readily identify, should be for non-credit-bearing modules of non-standard lengths. 'Interactive textbooks' developed for sale to other universities could be sold on a discounted basis to our alumni. After we gain experience, we might develop a mechanism for awarding credit. Some modules should address their personal and hobby interests and need not necessarily mimic credit-bearing courses.

Aside from serving the needs of our graduates, we could also use this mechanism to maintain their ties with the university. This might eventually strengthen the university's fund-raising efforts too.

Options for prospective students: As we develop an inventory of Cornell-quality instructional/interactive learning materials, we might provide free access to the first

chapters of these materials to those who submit an application for admission. What better way to give them a glimpse of the high quality of the faculty and the vitality of the intellectual life here?

Options for enrolled students: We might use these distance learning materials to create Cornell-flavored advanced placement or summer course equivalent courses to facilitate graduation in seven, rather than eight semesters. This would have the practical effect of allowing an undergraduate student to pay for only seven semesters of tuition and residency costs⁸. In other words, we'd be using Cornell faculty-generated content and if Cornell credit by examination made sense, we could use this as a means to expand our under-utilized summer sessions. This, of course, depends upon being able to increase the number of students in residence from the admissions pool without diminishing the quality of the student body. We'd simply increase the 'throughput'.

This effort would create a demand for technology literate teaching assistants⁹ to serve our residential students, but also generate income to support our alumni and the faculty at other institutions who are using the Cornell-published content.

Options for Emeritus Faculty: Our senior faculty, say those who are plus or minus five years of retirement, could become a rich source of content. Their vast, lifelong teaching experience would allow them to be especially well suited for communicating with a broad audience.

Our emeritus faculty group, CAPE¹⁰, is already considering an effort to capture for each emeritus faculty interested in participating, a 'great lecture' – giving them an opportunity to share their favorite intellectual passion with their own group, but also with our alumni and even with our current undergraduates and prospective students. These lectures would attempt to present a 'grand view' of their specialty to a broad audience — something they are uniquely qualified to create.

Options for Cornell Faculty: This thrust would provide a method for members of the faculty to supplement their incomes – especially the full professors whose salaries are more insulated from market forces that shelter younger faculty.

This discussion does not deal with all the possible opportunities, but does provide a map for a core thrust. Obvious omissions include specialized professional degree programs, some of which are already under active discussion here.

Similarly, the great opportunity for bringing resources from outside Cornell to our students in residence must be explored. We can enrich the experience of our current students by drawing on non-traditional resources.

⁸ Allan Tessler, Trustee

⁹ Alan McAdams, op cit

¹⁰ Cindy Noble

Already Cornell faculty are enriching courses such as entrepreneurship¹¹, real estate¹², law¹³, and apparel design using virtual visits by experts who otherwise might not be able to justify the actual travel time to Ithaca.

We must also explore the great potential for serving an international audience – after all, Cornell has a wealth of experience serving international students here that stretches over many decades. Distance learning provides a new vehicle for expanding that mission¹⁴.

Closure: One can easily imagine other directions in which to expand this effort. Indeed, not all of the options mentioned above need be implemented to create a comprehensive program. We should begin immediately, but with the clear understanding that we can and should adapt plans as we gain experience and as the technology develops. We should find and capture the distance learning niche that best suits our interests and strengths – before this great opportunity is captured by others.

¹¹ David BenDaniel

¹² Robert Abrams

¹³ Peter Martin

¹⁴ Norman Scott and H. Dean Sutphin op cit.