

# Virginia Distance Learning Cost Model

## *Introduction*

As institutions witness the phenomenal growth of virtual universities, cybercolleges, distance learning programs, and online courses, how prepared are they for making the resource allocation decisions with which they are confronted? Do higher education leaders know, for example:

How much it costs to develop an online course/degree program and what is the “break-even” point?

When does a distance learning program become cost-effective and how can this be measured?

How much effort should be put into online courses based on the mission and size of the institution?

What faculty workload issues are involved in offering online courses? How should these be measured?

Does it make sense to pool resources across departments or divisions to build online content?

Should institutions build strategic alliances with business and industry to meet online learning needs? If so, what sort of outsourcing models should be used in cost strategies?

Even if online programs cost more, how much is it worth to be seen as a leader in using technology?

These are some of the many questions and ideas which may be addressed if institutions build resource allocation models and a planning process for distance learning. The topic of online courses and degree programs is not the only pressing question which suggests the need for a cohesive planning process and better resource allocation models. It is, though, perhaps the most costly to ignore; not only in terms of cost-effectiveness in using resources, but more importantly in taking advantage of the small window of opportunity now available for institutions to develop an online presence.

There is fierce and aggressive competition from all sectors in the online marketplace for higher education. Without the types of cost analysis described in this proposal, colleges and universities are ill-prepared to meet this challenge and may find themselves left out of the race to capture the large but still finite market of online enrollment. As Tony Bates explains, “If we don’t understand and measure the costs, how can we make informed decisions?” (Bacsich et al, 1999, p. 3).

The Andrew W. Mellon Foundation has through its Cost-Effective Uses of Technology in Teaching (CEUTT) program made a significant contribution to the national dialogue about assessment and cost studies of teaching technology. This proposal builds upon the cost model developed at George Mason University as part of its CEUTT grant, expanding it through the statewide implementation of a new “Virginia Distance Learning Cost Model” that will assist all Virginia colleges and universities in making good resource allocation decisions about online courses and programs.

## *Systemic Implementation of the Cost Model*

The State Council of Higher Education for Virginia (SCHEV) recognizes the need for this type of planning and analysis, including it as one of its “Top 10 Priorities” with the following mission statement: “Coordinating the efficient use of financial resources in the delivery of high-quality, higher education programs via distance and ‘e-learning’ technologies.” SCHEV has endorsed this project proposal and is

very excited about applying the model and using the resulting data to promote best practices and efficient use of e-learning financial resources.

The Executive Director of SCHEV, Phyllis Palmiero, believes that the proposed statewide cost model will significantly assist her in facilitative effecting leadership in distance learning. Funding has not been available for a statewide virtual university or for a director of distance learning position. Since the most critical aspect of planning for online programs is financial, the proposed Mellon project will help the state remain competitive and make efficient use of scarce resources at a time when state revenues are much less than expected.

The Director of Institutional Research and Directory of Technology Services for SCHEV, Tod Massa, has been involved in the planning process for this project and has taken the proposal a step further, presenting the idea to the Virginia Department of Planning and Budget. Mr. Massa has offered to assist the researchers by streamlining central collection of the data needed for the cost model, coordinating this with the new statewide data warehouse project and the SCHEV performance indicators project. With this level of support, the researchers will be able to quickly move from data collection issues to the more substantive work on building models, sharing best practices, and diffusing the results.

With SCHEV assistance, it is proposed that the GMU Model be taken statewide so that every institution in Virginia is prepared to implement a Distance Learning Cost Model. In order to have the most impact on a critical issue facing the Commonwealth, it is proposed that the model be limited to the analysis of online/web-based course and certificate/degree program costs.

The results of this model will be incorporated in the SCHEV Master Planning process, helping to map future enrollment growth and what it would cost to respond to this growth with online versus traditional approaches. Dr. Milam is already involved in this process, as a member of the SCHEV Master Plan Advisory Committee and working with SCHEV's Chief Economist, Dr. Fletcher Mangum on this project proposal. The state's existing methods of preparing enrollment projections are being supplemented with data on admissions by institution and Virginia county and employment by occupational category. Previous work on technology workforce planning is also included in the Master Planning process. In responding to these projection results, the critical question for policy analysts and higher education leaders is whether online versus bricks-and-mortar programs are appropriate. This cost model will help SCHEV produce more informed scenarios of the resource allocation needs of traditional versus online enrollment, based upon Virginia's unique set of complex cost divers.

It is expected that all 15 public four-year institutions and the 23 institutions of the community college system will participate in the project at some level. In addition, it is possible that SCHEV may require all schools, including four-year private institutions, to participate.

Other state systems have expressed interest in the model. Two serious inquiries have come from the Vice Chancellor of the State University of New York System, Dr. John Porter, and the Associate Vice President for Instruction and Student Services of the Colorado Community College and Occupational Education System, Dr. Richard A. Voorhees. It is envisioned that the Virginia Distance Learning Cost Model will be a model for other states. Its recognition by the World Bank suggests that it has international contributions to make as well. This has also been documented by the interest of Dr. Paul Bacsich and others in Great Britain as part of the "Costs of Networked Learning" and Flashlight projects.

### *Proposal*

With funding from the Sloan Foundation, the following activities would be undertaken over a three-year period:

### **Activity 1: Promote Knowledge Sharing and Statewide Diffusion of Best Practices**

- A. Best practices in distance learning cost models would be promoted through an annual conference, training, and strategic planning sessions held at institutions across the state.
- B. E-learning opportunities will be developed and promoted through online tutorials and papers about cost models. These materials will discuss how to implement the model, gather the data, and utilize the results, and will focus on the unique issues faced by Virginia institutions. All training materials will be digitized and made available for anytime/anywhere delivery.
- C. A project website and “knowledge collaboratory” will be set up to disseminate information about the project and promote feedback/dialogue from others working in this area. Threaded discussion groups, chat rooms, and other web applications will promote collaboration and virtual teams working on similar issues.
- D. Personalized consulting programs will be provided to schools online and in-person to help them implement the cost model in each unique setting, administrative information system, and organizational culture.

### **Activity 2: Develop Organizational Models that Promote Systemic Use of Cost Approaches in Virginia Colleges and Universities**

- A. By sharing the results of the institutional models, the project will help leaders to compare model results such as faculty workload and course/program costs across types of disciplines, Carnegie classification, and control.
- B. A set of recommendations would be developed about how institutions might make the most efficient use of resources for ongoing development of online courses and programs.

### **Activity 3: Create An Environment Conducive to Organizational Change**

- A. The researchers will help leaders to develop a change strategy for incorporating best practices and the model results into strategic planning processes.
- B. Funding will be provided for “release time” to involve faculty and staff as change agents in promoting and implementing the model at their institutions. For a semester, these faculty will be funded and recognized statewide as “Virginia Mellon Fellows.”

### **Activity 4: Promote Effective Leadership in Establishing Best Use of Distance Learning Approaches**

- A. Better document faculty roles and workload in developing online courses at different types of schools.
- B. Share effective strategies for faculty development, training, and workload in online courses and programs.
- C. Better document activities and tasks involved in developing online courses and programs. Share these as planning documents across institutions and departments.

- D. Promote innovative uses of online course technology through sharing best practices and their cost implications.
- E. Promote better understanding of the unique cost drivers which impact distance learning.
- F. Facilitate improved statewide leadership in distance learning.

### *The Model*

The model was originally developed for GMU by Dr. Milam and funded by the Mellon Foundation to study ways to “decrease unit costs with technology.” See the Mellon Foundation report of November 8, 2000 prepared by Dr. Milam and presented at the CEUTT Conference in New York. The model uses a hybrid method with both “activity-based costing” (ABC) and “micro-costing” to examine traditional and online versions of the same course. The ABC features of the model are taken from the *Flashlight Handbook*, which was coauthored as part of the project (Ehrmann and Milam, 1999). The micro-costing components of the model are taken from the work of Jenny (1996), NACUBO, NCHEMS, and KPMG.

The model has been vetted as part of a “Costing Summit” held in Denver in June, 2000 with WICHE, NCHEMS, Sloan, Mellon, Pew, and other researchers. It has been evaluated and discussed with Dennis Jones, Bill Massy, and Frank Jewett, three pioneers in the development of cost models. It has been presented at state, regional, and national conferences, including the Virginia Association for Management and Planning, the Southern Association for Institutional Research, and the Association for Institutional Research. A presentation to the World Bank was made in April.

As developed for GMU, the cost model for online courses and programs is relatively complex, requiring a significant amount of data and analysis. One of the benefits of this prior work is showing Virginia institutions how to obtain the data needed to run the model, based on the financial record structure and administrative information systems used in Virginia.

Three different versions of the model may be implemented: easy, standard, and full. The results in all three focus on two critical performance measures - cost per course section and cost per course credit hour for a traditional versus technology version of the same course. For analysis of program costs, multiple courses and other coordinating expenditures are aggregated. Using the model, planners may “tweak” various cost drivers to test their effect on the performance measures. For the full version of the model, these cost factors include the following data:

- Student and course enrollment
- Revenues (after institutional financial aid)
- Classroom/lab and office space utilization
- Opportunity costs (includes depreciation & maintenance)
- Faculty and staff workload
- Faculty compensation
- Direct and indirect computing expenditures
- Direct, non-computing expenditures
- Department, division, and institution-level overhead
- Program course offerings and coordinating expenditures

In developing the full cost model, the following steps are taken:

1. Define the distance learning issue to be studied (online courses or programs)
2. Choose outputs and relevant performance measures
3. Document activities and tasks
4. Gather faculty and staff workload data
5. Collect data on direct costs
6. Calculate data on hidden, indirect, or shared administrative costs
7. Gather data on enrollment
8. Calculate results for each activity
9. Calculate revenue stream
10. Summarize the results

The “easy” version of the model uses data on enrollment, space utilization, opportunity costs, direct costs, personnel compensation, and gross estimates of faculty workload. The standard version adds more breakout of faculty workload for activity-based costing by task. Indirect costs, administrative overhead, and revenue (after financial aid) are added in the full cost model. Each school, once briefed about the model and its different types of implementation, will decide how it wants to conduct the model within these three frameworks. It is possible that many schools will want to begin with the “easy” version of the model, then expand the work to more sophisticated cost drivers once the benefits are seen by planners. This process will be greatly facilitated by the involvement and coordination of SCHEV’s offices of Institutional Research and Technology Services, which will assist the researchers in gathering the data through its new statewide data warehouse and other reports coordinating efforts.

The results from GMU’s use of the model suggest that net costs per course section vary widely and are, as expected, noticeably higher for the technology courses in all but one case. There are significant startup costs in personnel and computing, even when these are amortized. Cost savings do result with the use of part-time faculty. Classroom/lab and office space are important factors to consider, with noticeable savings in those course sections that met less frequently on campus. The concept of opportunity costs, as discussed in the work of Gordon Winston and the Congressionally-funded College Cost Commission report, is a useful way to account for depreciation and maintenance costs which are difficult to calculate. Also, the use of seed money to develop online courses and for-profit, affiliated virtual universities needs to be explored. At George Mason, many of the best practice courses studied in the GMU Model were developed because of funding from the Mellon Foundation’s CEUTT project. What is the role of seed money and other types of incubator projects in startup costs? It is these types of conclusions which are possible with the Virginia Distance Learning Cost Model.

There is an economy of scale at work in the calculation of department and division overhead used in the full cost model, suggesting that not all units are equal in bearing the cost of technology support. The greatest factor that drives the performance measures is enrollment. Increased enrollment through technology offers obvious cost savings, but only with the amortization of development costs for personnel and computing. There appears to be what Jewett terms a “crossover point,” at which technology courses and programs become more cost effective with increased enrollment, decreased use of space, and reliance on part-time faculty after the technology content is developed. It is these same factors which make up the “easy” version of the model.

There is as much for Virginia institutions to learn from questioning their assumptions for cost models as from the results. The by-products of the process that should be valued include better documentation of faculty roles with technology, better understanding of tasks for course and program development, highlighting of best practices in faculty use of technology, and better knowledge of the unique cost drivers that impact an institution.

## *Conclusion*

Institutions must be prepared to address the complex issues of opportunity costs, efficient space utilization, shared resources for direct and indirect computing, and new types of faculty workload, roles, and rewards in using technology. Armed with the analytical tools in this distance learning cost model, the documentation of best practices, and a vision for knowledge management, Virginia's colleges and universities will be better able to compete in this virtual age through creative and data-driven resource allocation solutions. It is only in this kind of systematic approach to resource allocation that institutions will be able to successfully leverage existing technologies.

This project builds on the best practices developed with the Mellon CEUTT project and implements the GMU Cost Model in a systemic approach across a wide variety of institutional types. The evolution of this model is only possible if undertaken within a state or system that recognizes the critical importance of efficient resource allocation, also one that has comparable reporting systems and data structures in its administrative information systems.

The State Council of Higher Education for Virginia has a long history of using cost-of-instruction models and has been developing complex enrollment projection and resource allocation models since the early days of NCHEMS in the 1970's. Given declining state revenues, SCHEV also must respond to the state mandate for coordinating efficient e-learning. With new enrollment and employment projects based on institutional admissions by county and employment occupational categories, SCHEV is very interested in the use of this cost model in the second phase of its Master Planning Process. This is a unique opportunity to implement a well-tested cost model, with potential results for many settings outside of Virginia.

Overall, there is significant potential with this project for promoting knowledge sharing and statewide diffusion of best practices, developing organizational models that promote systemic use of cost approaches in Virginia colleges and universities, creating an environment conducive to organizational change, and promoting effective leadership in establishing best use of distance learning approaches.

## *Management*

Dr. John Milam of the University of Virginia and Dr. Stephen Ruth of George Mason University will be Co-Principal Investigators. UVa will administer the project through its Curry School of Education. (Dean David Breneman served on the CEUTT advisory committee for Mellon). A full-time project associate director and part-time research assistants would also be funded through UVa, as well as other required staff. Dr. Ruth and his International Center for Applied Studies in Information Technology (ICASIT) would have two responsibilities: managing the knowledge diffusion process conceptually and assisting in the integration of George Mason's distance learning experiments into the collective findings of the broader study. It is also proposed that Virginia Commonwealth University become a special partner in this research effort, working to help refine and implement the model. A VCU staff member will be designated as the project liaison.

## *Budget*

A more formal proposal will describe the specific schedule of planned activities. In broad terms, the first year will involve preparatory projects and active involvement with a subset of the institutions that will participate. The second year, remaining institutions will be integrated into the process and individualized versions of the cost model will be created using the easy, standard, or full methodology at all institutions. Analysis of the model results, best practices, and other knowledge management features will be the focus of year three. Throughout the process, the project will emphasize active, broad-based, documentation of knowledge share processes, so that every institution is fully informed about the costing approaches avail-

able individually and statewide. The majority of the funding will be directed to the UVa project responsibilities, with approximately \$200,000 directed to the ICASIT-managed efforts at GMU and approximately \$100,000 to VCU.

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