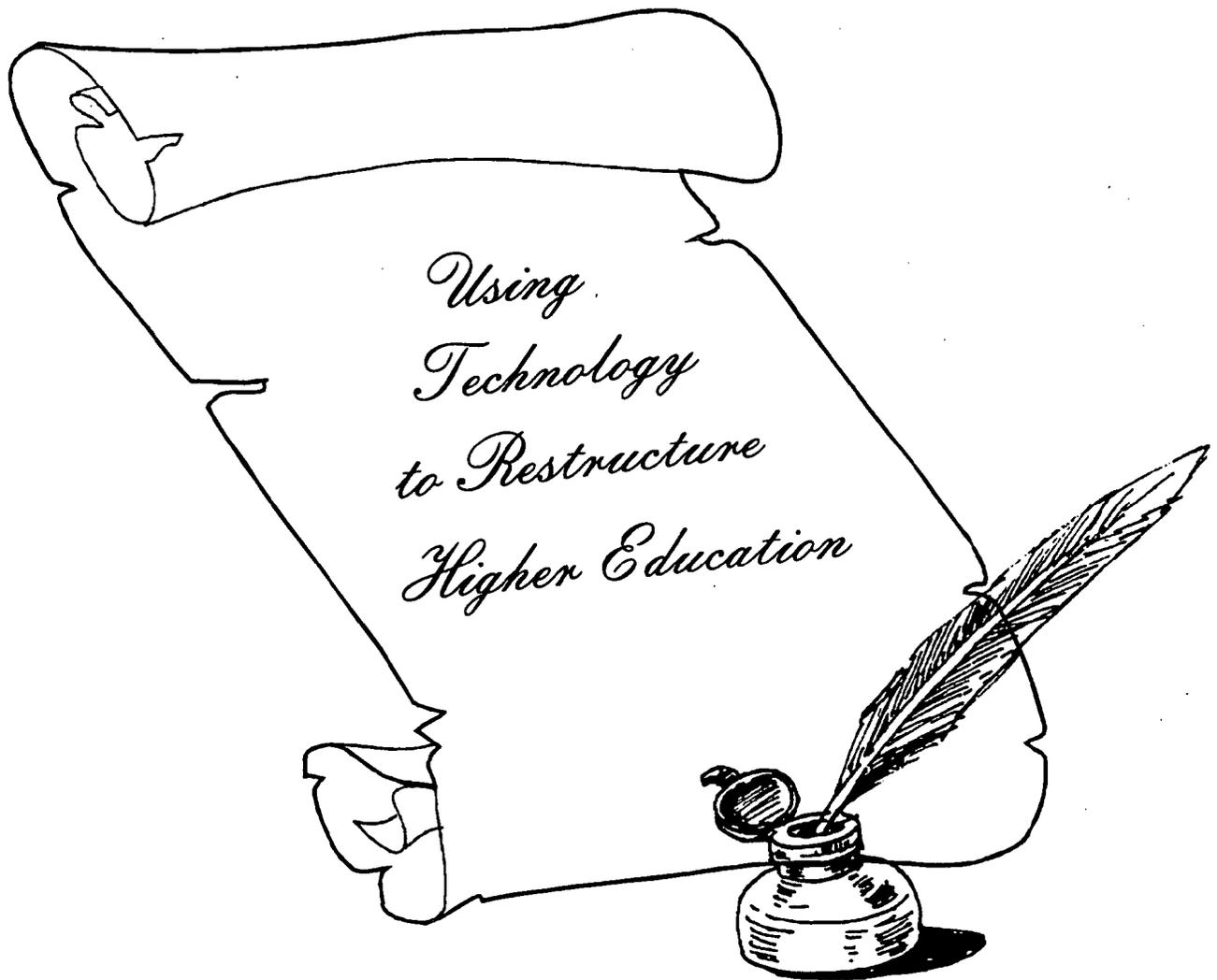


THOMAS JEFFERSON INSTITUTE FOR PUBLIC POLICY

Campaign '99 Issue Paper



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Thomas Jefferson Institute for Public Policy

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This Campaign '99 Issue Paper, "*Using Technology to Restructure Higher Education*," is published by the Thomas Jefferson Institute for Public Policy. It is sent to all state elected officials, all candidates running for state office in 1999, business executives, academic leaders, policy experts, and the media in Virginia.

The ideas in this Issue Paper do not necessarily reflect the views of the Thomas Jefferson Institute or its Board of Directors and nothing in this study should be construed as an attempt to hinder or aid any legislation.

Foreword

The American economy is dramatically changing as technology becomes a greater part of our everyday lives. Computers at our businesses keep our financial records, track employee hours, and eliminate the need to keep the quantities of paper that we have kept in the past. They allow us to communicate with our customers, our suppliers, and our associates faster than ever before. At home, computers are becoming more and more common as we manage stock portfolios and family budgets, organize Christmas card lists, research various topics, send family pictures, and much more.

Technology businesses are breaking down barriers for commerce on a regular basis. And some project that as many as 30% of the workforce will be working from home or at regional workstations in the next 20 years.

The use of technology needs to become a larger part of our educational experience. The use of technology should be a major part of the long-term planning that goes on at our colleges and universities, and in our General Assembly as plans are made for what will be needed in the years just ahead. State resources are limited and we simply must look to technology as a way of taking better advantage of the challenges facing us.

The enclosed paper by John Rocovich brings this topic to the area of higher education in a creative and reasonable basis. Those in policy making and policy influencing positions in our commonwealth should seriously consider his ideas. Not to use technology in the areas outlined in this paper would be a disservice to our students, to our parents, and to the business community that is seeking better-educated graduates for their work requirements.

As our General Assembly discusses the future of higher education and how and where state resources should be used, the ideas in this paper should be carefully considered and properly factored into these decisions.

Michael W. Thompson
Chairman and President
Thomas Jefferson Institute for Public Policy
September 1999

USING TECHNOLOGY TO RESTRUCTURE HIGHER EDUCATION

By: John G. Rocovich, Jr.

Introduction

Higher education can be compared to a fruit tree. The fruit tree needs sunlight, water, fertilizer and constant pruning for maximum quality and volume. Institutions of higher education eagerly seek the sunlight, water and fertilizer; but at least from my vantage point, they seem to lack the determination and discipline for the constant pruning of deadwood in staff and programs.

Compared to the dramatic restructuring of American industry, Virginia institutions of higher education have not yet substantially restructured, even when funds were sharply reduced a few years ago. The Commonwealth's public institutions delivered about \$100 million in total restructuring savings over this period of time. Virginia Tech provided about one-half of that amount.

In general, when educational institutions are charged with restructuring themselves, the result seems to be a huge amount of process ending in a lesser amount of substance. From my limited vantage point at that time, Virginia Tech appeared to deliver the most substantial restructuring; yet I suspect that all institutions of higher education in Virginia could have done more. We made a good start in Virginia; but like the fruit tree, our higher education restructuring needs constant and continued pruning.

Case Study - Virginia Tech

After hearing live commission presentations from VCU and GMU, I recently circulated a brief written summary of Virginia Tech's restructuring efforts, the highlights of which are as follows:

- Between 1990 and 1995-96, Virginia Tech experienced overall General Fund reductions of \$46 million, while it was authorized to recover only \$15.3 million through tuition increases in the same period.
- In the midst of the budget reductions, Virginia Tech began a restructuring process that has permanently reallocated \$36.2 million in the base budget to date, along with another \$14.9 million in one-time reallocations.
- Virginia Tech is now serving an additional 2,000 Virginia undergraduate students (in accordance with its restructuring plan), but has received no additional general fund appropriations for those students.
- Virginia Tech's total Educational and General cost is at least \$2,000 per student below that of its peer group--a \$50 million dollar difference in budget terms.

Use of these concepts in other areas

I believe in using cooperation among institutions and high-technology delivery systems for relatively complicated technological subjects, such as microelectronics, civil, electrical, and other engineering disciplines, information systems/ computer technology, and master of business administration.

I believe these techniques work best as a supplement in expensive educational areas, such as microelectronics. However, the concept should be fully useful in other areas.

Two-way interactive, digital, voice, video, and data technology such as *net.work.Virginia*, offers enormous possibilities for education. Higher education can achieve a new level through this digital, interactive, instructional technology (asynchronous learning).

Although there are considerable up-front costs, and much more has to be done before asynchronous learning is in widespread use, our institutions of higher education should select areas of study that could benefit from delivery of courses that an institution can deliver at a quality equal to or greater than currently provided at a given school.

Delivery of Special Courses

For example, Bud Robertson at Virginia Tech is a renowned authority on the Civil War. His course can fill up an auditorium of 500 but is limited to 300. His lectures are spellbinding; but, because of large enrollment, the question-and-answer interaction available for a class size of 20 or 30 is not possible. Tests and exams are computer graded. Why shouldn't his course be offered by Internet, *net.work.Virginia*, satellite, wireless spectrum communication, or other means to the other higher education institutions in Virginia that either do not have such an eminent professor in a specialized, but popular subject, or that merely want to expand course offerings at extremely low cost?

Virginia Tech already offers a distance-learning course entitled Entomology 2004 (Insects and Human Society) taught by Tim Mack. This course is an on-line undergraduate course that meets the University's core curriculum requirements. A total of 619 students from across Virginia, as well as from five other states and Canada, have enrolled in the course since its conception in the fall of 1997. This 100% web-based course utilizes film clips, electronic presentations, and an interactive quiz review system. Because the course is unique to Virginia Tech, students from other institutions could take a course that would not be offered at their institution. 850 students are taking on-line courses this semester at Virginia Tech.

The Blue Ribbon Commission's own Larry Sabato and Jon Mikalson both offer wonderful courses in Political Science and Classics, respectively, at the University of Virginia. Such courses would benefit all the other institutions of higher learning in Virginia. These

courses, delivered by high-tech, asynchronous learning systems, could also provide non-traditional student citizens the opportunity to take their courses for audit rather than credit.

“Video teaching” -- one-way video transmission of lectures -- has been around since the beginning of television. In spite of a concerted effort to develop it since then, it has never become a major factor in higher education because of its inherent limitations. Asynchronous learning is several levels beyond video teaching. Asynchronous learning not only offers the possibility of enormous economics of scale; but also, it offers the individual faculty member the opportunity to dramatically improve his or her instruction and to reach a vastly larger audience of older people, place bound people, and people like you and me.

I recently invested \$375 in purchasing a video course entitled “Great Minds of the Western Intellectual Tradition.” Those funds could have gone to help fund higher education in Virginia rather than the proprietary company from which I purchased it. The profits from this vastly expanded student base could be used to enhance the traditional educational program while simultaneously reducing its cost. This approach would benefit all constituencies: students, taxpayers, faculties, and administrators.

Use of High Technology in Traditional Lecture Courses

If the University of Virginia has the “best” lecturer in the state for Economics 101, Biology 101, or Chemistry 101, why should a student at Virginia Tech or James Madison University have no choice but to sit in a class of 200+ students, and to settle for a lecturer who is less than the “best”, when he or she could have the best over *net.work.Virginia*? Surely all fifteen of our institutions of higher education have some “star” lecturers from whom all the other institutions could benefit.

As wildly popular as the Internet has quickly become, there are certainly some asynchronous learning courses that would be chosen by sufficient numbers of students to be economically viable.

Although a proposal such as this one can generate extensive debate over who is the “best” lecturer, the market will decide the answer. If a Virginia Tech student taking Economics 101 could choose among four different live lecturers, one Virginia Tech video lecturer who is the “best”, according to the department head, one video lecturer, Nobel Laureate Jim Buchanan from GMU, and one video lecturer, Nobel Laureate Milton Friedman from the University of Chicago, it will not take the market economy very long to figure whom the students (our customers) want. Whom would you choose? I would sign up today, if such a course were available by asynchronous learning.

Any course that can be effectively and economically taught by asynchronous learning should at least be offered to be taught by that method. Virginia could attract and pay well a “superstar” video teacher to teach 20 sections of “Lecture 101”. This method would be more cost effective than hiring ten more “live” professors to teach the same 20 sections of

“Lecture 101”. In addition, for persons overly concerned about tenure, superstars do not have to worry about tenure. Since one “superstar” would be less costly than ten live professors, courses requiring live interaction, seminars and the like would then have more funding available.

Even asynchronous learning taught by “superstars” will require faculty to handle discussion and question sessions, help sessions, laboratories, testing, and the like. It is essential to emphasize however that this high-technology approach can dramatically improve traditional methods of instruction, is more in tune with the students enrolling in our institutions and is a way to significantly expand access to citizens who have previously been denied opportunity to take advantage of higher education.

Professors who wanted to teach small, “live” sections could then have their wish, as could those professors who wished mostly to focus their attention on writing or research – and all would be paid accordingly. Although there is no way to top a spellbinding live performance from a great teacher, all who have enjoyed higher education have experienced teachers who showed up sick, tired, unprepared, uninspired or not at all. **Our students are our customers and our constituents. They deserve an outstanding performance for every minute of every class. Asynchronous learning guarantees the best performance from the best performer for every minute of every class.**

Although video screens and equipment can malfunction occasionally, rarely would teaching time be lost during the course of a year to that problem. Courses taught electronically quite obviously extend educational opportunities to greater numbers of students without requiring additional capital construction.

Objections to Asynchronous Learning by Faculty/Administration

The objection most frequently raised to asynchronous learning is the inability to enjoy personal questioning and interchange. A proponent of that position just last month was J. Bernard Machen, the new president of the University of Utah who was formerly provost at the University of Michigan. He represents the position of the entrenched academic establishment.

To quote Mr. Machen, “the use of technology can be an important part of the delivery of certain aspects of education.” However, he grudgingly refers to the use of technology as an “experiment...most appropriate for the job-skills component of education.” He then states the traditional view:

“It inherently limits the broader, more interactive aspects of a university education...Spontaneous debate, discussion, and exchange of ideas within the classroom are essential in developing the mind. Poetry must be heard, interpreted, and discussed--with professors and with classmates. Learning about the different professions and academic disciplines available at the University of Utah requires personal involvement, and that is only available on our campus, and it can only be experienced by being here.”

Although to some his words have a lofty, elitist ring to them, he eventually gets around to his real point by saying that it is “disingenuous to suggest that this use of technology will eliminate the need for continual capital improvement in education.”

His solution is a familiar one, frequently heard in Virginia - the only solution to the future of higher education is massive dumping of capital construction money on the Commonwealth's higher education institutions. We should remember that State institutions of higher education are fiduciaries—a public trust of taxpayer dollars to be spent educating the young men and women entrusted to their care and tutelage. The obligation of these institutions is to do good with the funds entrusted to them and, further, to do that good efficiently.

Mr. Machen's comments were a pointed response to the creation of the Western Governors University, a virtual institution founded by the Governor of Utah and the Governor of Colorado, among others. Assuming Mr. Machen is correct about the teaching of poetry, wisdom would dictate that courses that lend themselves to high- technology delivery will provide the savings both to reduce tuition charged to the students and to fund those courses that require the learning system he describes.

Another valid point is that thus far, distance learning program growth has been mostly at the graduate level. Distance delivery of courses is clearly part of the future of graduate education. It is already ingrained in the way we operate in Virginia. Faculty have suggested that after years of working with undergraduate students, they are simply not convinced at this point that the students will be effectively served by video delivery in large numbers of courses. Undergraduates, they say, simply do not have the maturity to properly approach such courses.

Graduate students are typically far more mature. Often those in the market for these types of courses are full-time working professionals who see the value in obtaining this type of material delivered in a time frame that meets their work and personal life schedules. We may not see the same institutions getting heavily into distance and video delivery of courses at the undergraduate level. **I may be incorrectly and too rapidly extrapolating a phenomenon taking place at the graduate (M.S.) level over into the undergraduate arena, but the rewards surely justify the risk of the experiment.**

In November 1998 *The Durham-Herald-Sun* reported that the North Carolina School of Science and Math was using distance learning to teach 9th through 12th graders the “Art of Science and Math”. Perhaps my pride as a native Virginian prevents me from believing that Virginia college students cannot succeed with teaching techniques that North Carolina is using on its high school students.

Regardless of the speed with which high-technology course delivery occurs, the utilization of carefully selected and prepared pilot programs to test the waters is the wisest course. By allowing the market economy to have a chance to operate in a state university setting, the answers will appear promptly.

Virginia Tech's VTOonline Computer Courses

Judging from Virginia Tech's experience with VTOonline computer courses, I believe I have reason to be optimistic. This fall VTOonline has 850 students enrolled in online courses delivered over the Internet to the students' computers. For the spring semester, in addition to "Insects and Human Society", the following courses are being offered:

Math 114, Linear Algebra
 Geog 2034, Geography of Global Conflict
 Geog 2134, Geography of the Global Economy
 Humanities 1214, Introduction to the Humanities Medieval World
 CS 1604, Introduction to the Internet
 WS 5984, Contemporary Feminist Issues
 Phil 1504, Language and Logic
 Engl 3624, Appalachian Literature
 Engl 3764, Technical Writing
 Psci 5214, Contemporary Political Theory
 Psci 5244, Industrial Democracies
 Psci 3015, Ancient and Medieval Political Theory

Objections to Asynchronous Learning by Parents/Students

The objection most frequently heard from parents and students about distance learning education is that televised instruction falls short in the minds of students and the general public in comparison to "live", onsite instruction. In fact many people would probably question the overall quality of a university or college and its faculty if its entire core curriculum were "beamed in" from other schools in the Commonwealth.

My generation would be appalled at classes larger than 20 or 30 (not to mention 300 or 500). My generation expected to attend classes in which every student was called on to interchange with classmates and the professor at every meeting of every class. My generation did not expect multiple choice tests graded by computer rather than written answers graded for content and grammar by the professor. **Today's parents and students accept those erosions as "high-quality" education, even at the most elite schools!**

Times have changed since I went to V.P.I. for \$255 per quarter, when it was common for students to pay the entire educational cost with summer and part-time jobs. Time moves on -- even in an institution such as higher education, which has been noticeably slow to change. **The arrival of technology has impacted every other aspect of life and must change higher education, too.**

It is appropriate to return to my previous example from the section **Use of High Technology in Traditional Lecture Courses** (see page 3) concerning giving students a choice between Nobel Laureates by asynchronous transfer mode and "live" teachers. If the opportunity

to be taught by the "best" is not persuasive, differential pricing should be. Here were the choices:

1. Chicago's Nobel Laureate Milton Friedman, by asynchronous learning
2. GMU's Nobel Laureate Jim Buchanan, by asynchronous learning
3. The University's "best" lecturer, by asynchronous learning
4. Any one of four different "live" lecturers

I would pick Milton Friedman or Jim Buchanan. Whom would you pick?

Would your answer change if the "live" courses were taught only at 8:00 A.M. on Monday-Wednesday-Friday? Suppose the cost of the video courses were \$100 per semester hour versus \$300 per semester hour for the "live" courses. Would that change your answer? If a student took 30 hours of asynchronous learning courses at \$100 per hour, the annual tuition would be \$3,000 rather than \$9,000.

Would your answer to the above question of whom you would pick vary if you were:

1. The student?
2. The parents?
3. The parents with a household income of \$20,000, \$30,000, \$40,000, or \$50,000?
4. A full-time student working his/her way through school with part-time jobs and loans?
5. A part-time student working full-time to get through school?

I could continue with this line of reasoning, but you get the point by now. We can deliver an asynchronous learning course, which can teach 20 people or 20,000 people for the same production cost. The variables of royalties (if any), classroom space for delivery of the video (if any), additional help sessions (if any), grading of tests, and miscellaneous costs are very small compared to the teaching methods traditionally employed for the last 1,000 years.

The technology wave is revolutionizing every aspect of society and human experience, including education. Virginia will either lead, follow, or be swept out of the way.

As a Virginian, I prefer that Virginia lead. Virginia is a leader today in high-technology delivery of higher education. In each major area of academic study, some combination of video delivery and "live" courses would provide the optimum mix to deliver the highest quality education at the lowest possible price.

One might criticize asynchronous learning as perhaps not being of a quality that would enable a potential astronaut or Nobel prize winner to maximize his or her potential. Although that may be true, we have produced both in Virginia state universities.

But our purpose is not that narrow. Few will be astronauts or win Nobel prizes. We have millions to educate. Virginia has produced outstanding results in the past and can continue to lead. For a family of modest resources and financial credit our institutions are an answered prayer. They are likewise for a person needing “a college degree” to qualify for a better job with the current employer, or just to be hired initially.

Other Needed Restructuring

(a) Curriculum Restructuring

In addition to restructuring the delivery system for individual classes, considerable efficiencies could be realized in curriculum restructuring. Virginia may not need (or might not be able to afford) to have faculty doing world-class research at all fifteen of its institutions of higher education. However, it should be able to find high-quality teachers who can present the findings of the “superstars” of the world. Ernest Boyer’s report on the state of higher education in the U.S. discusses four areas of importance, including the notion of “discovery” (typically meaning research), and “dissemination” (meaning education and teaching).

Currently Virginia Tech, U.Va. and VCU are “Research I” universities. We do not have the resources in the Commonwealth to do cutting-edge research in all major areas at all of our universities. In fact, we would be better off if we decided which programs are highly duplicative among our various universities, then scaled some back to “service functions” in support of the major programs at their institutions. However, these decisions require enormous political will, with long-term follow-up to ensure full implementation.

(b) Avoidance of Program Creep

Another critical need in the Commonwealth is an oversight group for higher education that will stop the “program creep” phenomenon. Properly empowered, SCHEV could fill this role and thereby eliminate the notion that each state university/college should somehow aspire to present “one-stop shopping” for all conceivable degree programs.

In the United States only California has more public Research I institutions than Virginia. Surely it does not make economic sense to continue adding doctoral programs to all 15 institutions.

Funds saved from such restructuring could then be utilized in two ways: (1) passed back to families in terms of **reduced tuition costs**, and (2) spent in order to convince students and parents that the university being considered can provide them with a meaningful, up-to-date education for the chosen field that they wish to pursue. Students and parents then would be convinced further that instead of spreading funds over too many fields, our institutions have instead focused on what they do best and also have delivered the necessary support services in terms of career counseling, etc., that will help the student be successful in both the pre-degree marketplace (e.g., co-op, internship, professional experience), and post-degree job market.

(c) Niche Identification

Individual universities should figure out what their market niches are and then build to those strengths. Some colleges should focus on turning out the best educators possible for the Commonwealth but might not need to try to compete with other universities to turn out engineers, architects, and business majors. Currently too many institutions are trying to be all things to all people. The result is a true dilution of effort and limited resources.

Flexibility and Responsiveness

High-technology video delivery has much greater flexibility and responsiveness. Higher education institutions are like battleships. It takes a battleship 20 miles to change directions, unlike a good football running back, which nimbly changes direction instantly to seize an opening.

Every time an institution adds 1,000 or 2,000 traditionally taught students, years of construction and tens of millions of dollars worth of infrastructure and operating expense are required. High-technology cooperative teaching is more like a running back than a battleship. Such teaching enables us to deal with the rapid changes in life caused by rapidly advancing technology.

For example, the shortage of graduates in microelectronics and information technology will not exist forever. Ten years of good production by Virginia schools probably will saturate that demand.

If every institution of higher education fully staffs up with professors, buildings, labs, clean rooms, specialized equipment and the like to produce as many of these majors as possible, a highly wasteful economic dislocation will occur when the need is met. For example, in the early 1990s the *Wall Street Journal* and other publications dramatically described the shortage of environmental engineers and environmental scientists. In less than a decade that shortage has turned into a surplus. Metallurgical engineering also demonstrates this problem. As steel mills closed by the dozens over a 25-year period, engineering schools kept turning out metallurgists until there were no jobs at all. If these experiences were replicated today, the Commonwealth would incur large costs, such as reconfiguring buildings and equipment and the buyouts experienced in the recent restructuring.

In response to Sputnik, National Aeronautics and Space Administration hired thousands of engineers, physicians, and mathematicians. In the 1970s and 1980s, NASA made two major cutbacks and tens of thousands of these highly skilled workers were forced back onto the job market. For example, an acquaintance with a newly-minted Ph.D. in Physics applied for an instructorship at Furman College. The college was swamped by 400 applicants with Ph.D.s in Physics who had been terminated by NASA.

Prospective Demand is for Educational Programs Not Capital Facilities

These examples merely restate the old principle that "you don't build a church to fit the Easter Sunday crowd". National birthrates do not directly translate into higher education demand on a state-by-state basis. Immigration and local factors cause variances. Virginia is no exception. As SCHEV director Bill Allen pointed out in a speech on December 4, 1998, "After declining through the late '80s and remaining relatively flat through much of the '90s, the number of high school graduates has started to rise again. Graduating high school classes in Virginia are projected to grow through 2003, dip for a few years, and then peak around 2007."

Since the birthrate has flattened out with the end of the "baby boom echo" and is trending downward, cautious building would be prudent. Precious education dollars must be spent on educational programs delivered to students, not on massive capital facilities that may be empty much of the time.

Births and Deaths in the U.S.
Sources National Center for Health Statistics,
U.S. Dept. Of Health and Human Services

Year	<u>BIRTHS</u>		<u>DEATHS</u>	
	Total number	Rate	Total number	Rate
1960	4,257,850	23.7	1,711,982	9.5
1970	3,731,386	18.4	1,921,031	9.5
1980	3,612,258	15.9	1,989,841	8.7
1990	4,158,212	16.7	2,148,483	8.6
1991	4,110,907	16.3	2,189,518	8.6
1992	4,065,014	15.9	2,175,613	8.5
1993	4,000,240	15.5	2,288,000	8.8
1994	3,952,787	15.2	2,278,994	8.8
1995	3,899,589	14.8	2,312,132	8.8
1996	3,891,494	14.7	2,314,680	8.7
1997	3,894,970	14.6	2,314,738	8.6

Virginia schools offer outstanding buildings, equipment, and faculty. Through cooperation and high-technology delivery systems we can increase the availability of higher education to handle the increased enrollments caused by immigration and birthrate fluctuations

without major construction of expensive buildings (followed by 100 years of high maintenance, repair, and utilities costs, filled with expensive duplicative labor cost).

The design and structure of high-technology cooperative teaching can provide the horsepower without the enormously expensive infrastructure of people, building, and equipment that might become obsolete a decade later. Cooperation and high-technology delivery provide the cost-effective flexibility for high-quality instruction at all of our state institutions, without prohibitively expensive initial capital, equipment, and operating expenses at the beginning and prohibitive restructuring expenses at the end of the cycle.

Therefore, cooperation and high-technology delivery are the best currently available answers for providing a quality and affordable college education. Virginia Tech and the other schools that have been participating in various distance learning through high-technology delivery starting in 1983, have been developing and perfecting the methodology for a long time. Now the entire Commonwealth must capitalize on past successes in order to take our higher education system to the next level.

Between AD 400 and AD 1400, the body of knowledge doubled. The only major scientific advancements were the waterwheel and the windmill. Now the body of knowledge doubles every 5 or 10 years. Among society's institutions, universities appear to be the most resistant to change, since they have been operated in a similar manner for about 1,000 years. They have benefited from the use of technology around the fringes, but the teaching technique has been much the same since the time of Socrates, some 2300 years ago (other than the fact that class sizes have continued to grow in many areas). Asynchronous learning and cooperation could revolutionize higher education as much as the printing press helped bring the world out of the Dark Ages.

Universities are, after all, fiduciaries. They occupy the public trust with custody of our funds, our children, and our heritage. It is not unreasonable to demand efficiency and accountability in the execution of that trust.

Asynchronous learning is also a cost-effective experiment that identifies and fills needs. As previously mentioned, distance learning in Northern Virginia and Richmond evolved into full-fledged, on-site engineering programs. That evolution proved far cheaper than building a school and waiting to see if anyone would attend. Several flagship schools in other states made this costly error when they invested in high-tech buildings or research parks, only to discover that there was no demand.

Properly employed in the right courses, technology could actually drive up the quality and drive down the current cost of higher education in Virginia. We have the opportunity to lead the escape from the "one size fits all" delivery system of higher education that has been available to only a limited number of our citizens to reach a new level providing a "custom fit" delivery system available to *all* of our citizens at an affordable price.

The University of Phoenix, a private proprietary school with 50,000 students in a dozen states, is prospering from its rapidly growing distance learning business. To compete with the University of Phoenix, New York University has started a for-profit subsidiary called N.Y.U. On-line, Inc. to develop and sell courses to be delivered on line. U.C.L.A. has hired a marketing company to market course videos. Even the venerable University of Wisconsin is weighing the feasibility of creating a for-profit entity to sell courses (although there is some doubt about its ability to enter this field). The school has already started Learning Innovations, a division to develop and distribute courses on line.

Charles B. Reed, Chairman of the California State University System, reportedly told a faculty audience that, rather than close down Phoenix, he wanted to compete with it. Duke, Stanford, and Colorado State are actively delivering distance learning. If Virginia rests on its laurels, states like Maryland, Georgia, and North Carolina will pass us and seize leadership, to our severe detriment. **Virginia has always been a leader and innovator in areas that really matter. Virginia must move forward to embrace the full advantages of high-technology delivery, plus cooperation, in order to maintain the momentum it is experiencing in economic development. Virginia should lead in this field, also. We must embrace new ideas to remain in the forefront in order to provide maximum opportunities to all Virginians.**

The Commonwealth would need to fund the start-up costs for a statewide program. Cost savings of participating institutions would fund the continuation of the program. The start-up costs of such a delivery system would be small compared to the total annual cost savings!

A recent situation at JMU offers an example in which high-tech delivery system could be a highly cost-effective, high-quality solution. As reported in the *Roanoke Times*, President Carrier noticed that although JMU offered a major in physics, very few students graduated with a major in physics. To maintain a physics major required eleven full-time faculty. With no physics major (but with enough faculty to teach all the physics courses needed for all purposes other than a major), JMU needed only three full-time faculty. I do not recall the net cost savings in salary, benefits, secretarial, office, etc., but it should have been at least \$1,000,000 – an amount that either could have been saved or utilized more effectively.

The JMU faculty met Mr. Carrier's decision with a firestorm of controversy, since they disagreed with the process and apparently were afflicted with the notion that once JMU offered a degree option, it should maintain that option forever (including all the faculty and expense related thereto), whether or not any student utilized it. A consortium of Virginia institutions could have inexpensively delivered the necessary courses over *net.work Virginia* to JMU and all the other Virginia schools that wished to offer a physics major without adding eight professors and enough course work to offer a major.

How many other such situations exist in our state institutions? One may see, by extension of the previous example, how a consortium of our schools could offer course work to other state schools thereby greatly reducing their operating costs and greatly enhancing the quality and variety of their course offerings.

The funds saved using cooperation and properly implemented high-tech delivery of programs would greatly exceed the seed money necessary to create the course offerings. **THE SAVINGS COULD ACTUALLY REDUCE TUITION COSTS IN THE FUTURE.**

Governor Gilmore has challenged our leaders to design a method to deliver greater quality and affordable cost for *all* of our state institutions, not just our flagship schools. **Cooperation and high-technology delivery systems are making this revolution possible today for some of our schools, and could potentially revolutionize higher education in Virginia, if the decision were made to extend these existing practices and technologies to other key areas of higher education.**

About the Author

John G. Rocovich, Jr. is a well-known and well-respected attorney and community leader in Roanoke, his home town. He is Chairman of the law firm of Moss and Rocovich.

Long active in the Southern Baptist Convention, Rocovich was Chairman of that organization's Education Commission. He has served as Chairman of the Endowment Steering Committee and the National Development Council of the Foreign Mission Board.

John Rocovich graduated from Virginia Polytechnic Institute and State University with honors and received his law degree from the University of Richmond, and his LL.M in Taxation from New York University. Since graduating from Virginia Tech, he has remained active in support of that institution. He currently serves on the Board of Visitors and is a member of the Finance Committee. Rocovich is the former President of the Virginia Tech Foundation, past President of the Virginia Tech Alumni Association, Chairman of the Major Gifts Committee for the Capital Campaign from 1993-1998, as well as being active in several other university activities.

He also serves as the current Chairman of the Harvey W. Peters Research Center for the Study of Parkinsons Disease and the Via-Bradley College of Engineering Foundation. He is a current member of the Board of Trustees for Mary Baldwin College in Staunton, is a current Director of the Virginia College Fund, is a former two-term Director of the University of Richmond Law School Association, and serves on the Development Council of Roanoke College.

His interest in education was the reason John Rocovich was appointed to the Governor's Commission on Champion Schools that worked on the Standards of Learning currently being implemented in the K-12 public schools in Virginia. He currently serves as a member of the Governor's Blue Ribbon Commission on Higher Education.



“... a wise and frugal government, which shall restrain men from injuring one another, shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government, and this is necessary to close the circle of our felicities.”

Thomas Jefferson

1801