

**VIRGINIA TECH'S CYBERSCHOOL/ACCESS PROJECTS
A PERSONAL PERSPECTIVE**

**A Discussion Paper
Built around the EDUCOM '95
Presentation
by
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In response to the numerous requests I have had from those I have met around the country who are also involved in curricular reform, and faculty who have been asking about the course I taught last summer, I have decided to 'publish' this discussion paper on-line. It is neither comprehensive nor the final word on any of these issues; but I do hope it is useful. If you wish to quote from the paper, I would be grateful if you could cite the source. Feel free to share what is here with colleagues, if you think it is useful, and excuse me in advance if I am unable to answer personal queries. I am rationing my e-mail time in order to preserve my sanity!

The structure is institutionalized and given permanence by the educational system. Agreement on the structure is efficient: it saves investigators from having to go back to first principles each time. The theory of the structure dictates what 'facts' shall be, and all values and assessments of results are internal to the structure. Since theory 'creates' facts, and facts prove the theory, the argument of science is circular. Commitment to the theory is essential to orderly progress. The unknown can only be examined by first being defined in terms of the structure.

James Burke in *The Day the Universe Changed*

**I. Information Technology and the Delivery Response
Conundrum**

(For those interested in the theories behind learning. Those interested only in practical application, scroll down to section II.)

In his book *The Day the Universe Changed*, James Burke, through a series of ingenious arguments, comes to the now-familiar conclusion that, apart from our perception of things, little changed at all. The

same scientific 'evidence' about the way the world works had always been there; but we were so busy fitting it into comfortable frameworks of reference that we fooled ourselves into believing the cosmos had fundamentally shifted.

In spite of information technology, we may be guilty of some of the same assumptions as the scientists Burke cites. We inhabit educational infrastructures whose very existence is premised upon two important notions: **guardianship** and **ownership**. We guard the curricula, the canon, the data, the lecture notes. We grant access to others only sparingly. People need all kinds of qualifications to enter the edifices of education. It is our way of ensuring two things: quality and purity. We claim ownership over ideas, aligning our claims to our certification and our status. It's been acknowledged for many years that the system was not designed to be student-centered or collaborative. The sudden ascendance of a so-called flat architecture--of an information system without toll roads or green cards has the potential to change the nostalgic structures Western society has worshipped for centuries. But we are still dogged by a major problem, one we haven't even begun to sort out: we have only a rudimentary notion of what constitutes student learning. As Stephen Erhmann points out in his EDUCOM article *New Technology, Old Trap*, we've been involved in broadcast teaching approaches for too long. Believing that the saying of the word results in the absorption of the concept, we have sent legions of students through learning experiences that provide them with none of the tools for survival they will need. Hoping that we can adapt the new technologies to existing teaching practices, we have grafted them wholesale onto the old system and then waited for them to work. But student-centered education is a revolutionary practice, a practice founded upon an equation that is often forgotten in the current debate.

The model I've invented to describe this phenomenon looks something like this:

Learning is equal to a combination of delivery and response where response is always far greater than delivery.

It's a very simple approach to solving what I call the Delivery/Response Conundrum. All it means is that we devote far too much time and energy as educators in fine-tuning delivery mechanisms, and far too little time focused on student response. The new information technology gives us the potential to explore the response dynamic in ways we never have before; it gives us a way to listen to

what our students are saying and educate them according to the responses they give us.

This is all well and good; but, if the structure of learning has been institutionalized, and if the unknown can only, as Burke suggests, be defined in terms of an existing and limited structure, how can we hope to begin reinventing ourselves from within these structures? In other words, is there anything worth saving? What do we know for certain about the way students learn in our classes? Why is it that some students do learn well in lecture classes, why others thrive in self-paced approaches, why some benefit most from collaborative learning models, and why others don't seem to be able (or willing) to learn much of anything. Isn't the first question we should be asking as we develop these new teaching/learning paradigms How do students learn? And isn't the second, What is it we want to teach them? I'm often faintly dismayed by certain kinds of business/corporate views on education, views that limit education to the learning of particular job skills. Why on earth should the business and corporate world assume that their matrices will remain stable? Aren't all of the rules we've lived by--the rules of the marketplace as well as the rules that have governed education--up for grabs? If we are in the midst of what amounts to the democratization of education, are we also in the midst of the democratization of the marketplace? And last but not least, once we find out in this new arena what it is students need to learn, will we be able to teach it to them?

II. A Shift in Focus: The Cyberschool/ACCESS Experiment
(This section is for those interested in the practical application of different kinds of learning approaches. If you've heard the EDUCOM presentation, you may want to scroll down to section III.)

All of those questions are fine, but they do little to help an administrator who is trying to take a proactive approach to the situation, who has almost no money for innovations, and whose appreciation of information technology may be somewhat limited. This part of the discussion paper is designed for him/her. It's a brief overview of the cyberschool and ACCESS experiments, and a kind of summation of the EDUCOM presentation that I will be giving with John Moore and Tom Head on November 1st.

The cyberschool experiment at Virginia Tech is only a small part of the curricular restructuring taking place here and at other

institutions. It does provide, however, a concrete example of what can be done with relatively few resources, a large measure of enthusiasm, and a dedication to the furtherance of student-centered education.

To be fair, I should admit to my own background and biases so that the perspective I bring to this will be clear from the beginning. As an Anglo-Jamaican poet and professor of English and Black Studies, I was perhaps less than ideally suited to the information technology arena. I was fated, however, to be a participant in the Faculty Development Institute a few years ago (information about the institute can be obtained at <http://www.edtech.vt.edu/IDI.html>), and my fate was compounded by the enormous potential I saw for change if these new systems were utilized. As an associate dean charged with curriculum, outreach and diversity in the College of Arts & Sciences, my point of view is that of an administrator (recently appointed) and a faculty member (of many years). It's also a minority point of view. I was tired of the pairing of exclusion with technology. When I was promoted from assistant to associate dean, it was my task to look at curricular reform in a college of thirty departments and programs. I also felt it was a matter of personal obligation to find a way for other people of color and disadvantaged people to access this new treasury of information.

Cyberschool was a term coined by Dr. Tim Luke in Political Science when he was a member of one of the Arts & Sciences' task forces assigned to look at curricular reform. Since then, cyberschool has had a child, ACCESS (Asynchronous Communications Courses to Enable Student Success), funded by the Sloan Foundation. But the symbiotic connection between the two projects means that they both share some essential characteristics. Both are intensely practical and do-able, and both place students in the center of the reform model. But before going on to describe them, it's important to look at what the catalysts were for their development.

In the College of Arts & Sciences at Virginia Tech, we were faced with some all-too-familiar challenges:

Low Faculty Morale; Few Rewards

After a series of devastating budget cuts (called fiscal opportunities by administrators), and little real increase in salaries, morale among faculty was low. Faculty were not always rewarded for teaching well. There was also a curricular revolution waiting in the wings.

Technology was going to change everything. But if I happened to be a full professor who had about as great a passion for computers as I did for root canals, who had taught using traditional methods for years, and who was just plain tired, the information age loomed in the background like the essence of despair. We rarely spoke across the disciplines. We taught largely in isolation, fueled by a steady, somewhat enervating resentment.

Influx of Students; Large Classes

Virginia Tech was seeing an influx of students into Arts & Sciences. In biology, we had reached saturation point. Our buildings were full; we needed a solution--fast.

Student/Parent Disenchantment

A series of articles in the local paper blasted the university. Faculty were portrayed as overpaid, under-worked, welfare recipients. Parents sometimes complained about service, particularly now that tuition rates had increased substantially. Quite understandably, they wanted value for their dollar. People were talking about cost containment on bad days and value-added teaching on good ones. (For an administrator value means the value the faculty member places on him/herself and is not--I repeat *not*--a promise of financial reward.)

Scheduling Problems/Credit for Contact "Law"

The credit for contact paradigm had us in a stranglehold. 3 hours contact=3 hours credit. It had been that way for decades. It was, by God, as American as meat-eating.

Cutbacks in Funding

Almost everyone in public higher education (apart from some of my colleagues at the University of Virginia) was broke.

In spite of all these problems, we had some remarkable advantages, not least of which was IDI. I myself as a graduate of the one-week workshop had begun to see how we could apply the technology. Working with John Moore, Tom Head, Tim Luke, Len Hatfield, Mary Beth Oliver and others, it became more obvious that at least some of the solutions could be found if we could reinvent our approach to teaching. Could technology be used to help us address the challenges? If so, how? As Carol Twigg and others have pointed out, selective, individual changes do little to revolutionize the system itself, especially in a climate controlled by notions of guardianship

and ownership. Administratively we needed to create an engine that could act as the change agent. Cyberschool and ACCESS, to some extent, have become that engine.

In the learning model we devised for the experiments, students are in the center. If the engine is the structure of Cyberschool and ACCESS, the students are the fuel, the car, and all the roads. Sometimes, faculty drive; sometimes staff take the wheel, and sometimes students are in the driver's seat; but there is an extraordinary effort on the part of faculty like Art Buikema and Bill Claus to remain student focused. Approaches like electronic conferencing, the creation of study cells in biology, the use of Daedalus as an interactive writing tool across the disciplines and asynchronous access to course material would allow students the freedom to pace themselves and interact with each other with or without the mediation of a faculty member or graduate assistant. Most importantly of all, we are trying to devise models that allow for collaborative learning to take place. If we limit the technology so that it does less than bring us into collaborative learning communities, we are selling it short.

Another approach we took was to forget about rank. Partnerships in Cyberschool and ACCESS were formed without regard to who was 'senior,' who was endowed with faculty status. One of the main hang-ups we have to dispense with in higher education is our absurd regard for the importance of rank. In some arenas, it has resulted in a dismissal of information technology as an agent of change simply because the messenger, the information technology advocate, was a staffperson rather than a member of the faculty. We will shoot ourselves in the foot if we don't grow up.

We were banking on the fact that if the partnerships that began to form during Cyberschool meetings worked, they would begin to replicate on their own--they would be self-generating. The ACCESS proposal to the Sloan Foundation (funded recently for \$200K) was one of the results. I was hoping that the administration could be a catalyst and facilitator. We needed to connect faculty to resources--often external, and we needed to show institutional commitment to the projects to ensure faculty buy-in. We hoped that the benefits to all this would include a speedy completion of courses; fewer whole-class contact hours; and more schedule flexibility. For my part, I was hoping that we would also see an upswing in faculty morale as they

reinvented their classes and saw students being thrilled by the kind of feedback these systems allowed.

The design was simple:

Get faculty together with a team of technical experts. Talk across the disciplines--biologists with communications professors; geologists with art historians. No one should enter the dialogue with any preconceptions. Faculty and staff would be encouraged to share best practices, then disseminate these through their departments. We realized we could not meet often in our interdisciplinary teams; people were too busy. So we took a self-paced approach, splitting off into smaller groups. The downside of that was that there are still members of the Cyberschool Team (which currently numbers around 30) who have had relatively little whole-group interaction. The upside is that we have managed to get some projects off the ground.

We decided to begin by creating some pilot models using fairly inexpensive methods such as electronic conferencing, customized home pages, commercial software--and then disseminate the results to the Cyberschool Team. It should be emphasized that we were not working in a vacuum--that the wheel had already been invented by many diligent faculty members who are working individually on course redesign. The difference here is the collaborative approach and the support structure put in place by Arts & Sciences and Information Systems. We'd experiment with two or three classes during the summer of 1995. The rest would come during the following year. We'd invited others to join us as we went along, eventually having representatives from the thirty departments and programs in the college, as well as representatives from other colleges in the university.

All the while, we decided to continue to seek external support. All of us were realistic about the budgetary situation. We knew that it would be almost impossible to obtain all the necessary funding through reallocation of resources. We had to look outside the walls of the institution and form partnerships with others interested in how information technology could be used to help students learn.

We had a huge advantage at Virginia Tech because of the Instructional Development Initiative designed by Information Systems/Educational Technology. Over 700 faculty have now graduated from the one-week intensive workshops; all of them have been given computers, software, hook-ups, and basic training. We

also began to realize the other advantage we had anticipated: once faculty begin to experiment with information technology, *as long as they get enough technical support*, they begin to fall in love with teaching again. The level of their enthusiasm is often directly proportional to the amount of support they receive. At this juncture I am worried that administrators will not take this into account as they devise new models of learning. If they don't, our experiment with the technology will fail. As faculty realize they don't have to abandon all of the traditional methodologies, they are more eager to embrace new methods they may not have tried before. When they see that these techniques offer a way to individualize the learning process, and that, in a team, sanity can be maintained, many more things become do-able. For administrators, the scheduling problem begins to open up. Windows appear in the curriculum. You can open them.

A selection of cyberschool/ACCESS courses are being offered in the coming year. These courses change monthly as faculty pace themselves, letting us know when they think they're ready to offer them. From an administrative point of view, some of the kinds of support Arts & Sciences and Information Systems has been able to give include:

- several hundred hours of instructional design time to a staff person in art history
- faculty release time on a limited basis
- extra travel money
- grant writing and liaison support

This kind of reallocation of funds can only come if a college is willing to take restructuring seriously. We are still a long way from Robert Heterick, Jr.'s vision of disaggregation, and a long way from the kind of massive administrative overhaul higher education will need to go through to become competitive in the new economy.

Having been through the process so far, however, I'd like to suggest a list of administrative do's and don'ts for those thinking of adopting a similar approach:

DON'T choose faculty/administrators who view education solely in terms of guardianship and ownership:

The faculty who are most likely to succeed in these kinds of ventures are those who are open to change, those who feel that education is

not only, to paraphrase Professor Eli Noam's words, the preserver of information, that its function is also (to freely paraphrase his words again) that of creator and transmitter of new kinds of knowledge.

DON'T attempt to do everything at once. Providing enough support for a few is better than too little support for the many.

DON'T always select the Mad Mouseketeers as your key team-members:

you know, the ones whose index fingers remained glued to virtual mouses (mice?) even when they are miles away from their computer screens. Try to select novices. They are often more effective on the team for a number of reasons: 1) they are regarded less suspiciously by their colleagues as they rarely talk about platforms or interfaces, and never wail that their hard disks are too small, and 2) they bring a refreshing sense of skepticism to the process and can sometimes envision applications that others, more familiar with the technoscene, would find difficult to see.

DO choose the best, most dedicated teachers you have, and try to involve their department chairs, if you can.

DO try to find external support and use administrative 'clout' (if you're lucky enough to have any left) to form collaborations.

DO link your assessment to your planning efforts with sophisticated evaluation techniques.

(David Taylor will be conducting assessment for ACCESS. He is utilizing techniques successfully used by Dr. George Glasson of Virginia Tech and others. For more information about the links between assessment and planning, check back with the Cyberschool or ACCESS home pages next semester.)

DO encourage a sense of humor on the part of everyone involved; you'll need it.

Lastly, don't be discouraged when things don't work. Often, they won't. This is a huge experiment as teaching has always been when we've allowed it room to breathe. There is a vital distinction to be made between what Stephen Ehrmann calls "broadcast teaching" and learning. We're only just beginning to explore it.

III. Examples of Pilot Projects

Why do faculty get so excited when they reinvent their classes? Because when you use technology with care, students get excited. We made a videotape record of the reaction of some of our students in the early pilot courses. As part of our "authentic assessment," these reactions will enable us to involve students in the reshaping of our offerings.

During the summer of 1995, Mary Beth Oliver taught the communications course on-line, and has scaled up to a class of 70 this semester. (Mary Beth has her own home page that can be accessed through a link on the cyberschool page.) I taught a hybrid on-line/computer-enhanced course on the civil rights movement and literature in four weeks rather than the usual summer length of six weeks; and Art Buikema taught a computer-enhanced honors biology course. I taught as a money-saving option: i.e. I was free. We were able to obtain internal funding support from Arts & Sciences for Dr. Oliver (whose support will now come from Sloan), and as Dr. Buikema taught the course as part of the normal offerings in biology, no special funding was required. (Dr. Art Buikema is one of the Principal Investigators on the ACCESS project. He and his colleagues, Drs. Bill Claus and John Neal, are attempting to come up with some truly innovative approaches to the teaching of biology. If you check this page again next semester, ACCESS biology faculty material will also be incorporated.)

I had wanted to teach a black studies course using the new technology ever since I saw a videoclip of Martin Luther King on a Persuasion presentation in the week-long Faculty Development Institute. It occurred to me that the technology could help African American students in particular--that they would have editorial power over history, over the video and audio, the texts; that they would not have to be victims of the legacy; they could be its shapers.

Something else excited me about the link between this part of history and the use of technology. As a child, I had sat in many classes and been appalled by racism. I had been forced to speak when the teacher wanted me to do so. I had been a lone voice of color in a class of white students. I knew how precious silence could be; how important it was to have time to collect your thoughts before the emotion overcame you. Couldn't the technology provide those necessary pauses--those places where students could dwell on what

they had seen and heard in the privacy of their own computer screens? They could then speak when they were ready to speak. And, if we chose the right medium, they could share thoughts with each other in all kinds of ways.

At Virginia Tech, summer sessions are usually six weeks long. Classes meet daily. I decided to meet daily with my class during the first 10 days; after that, about one day in four. I felt it was important that they know their professor was a woman of color. I wanted to know their faces and expressions so that I could better read their words. Michael Leahy made a Home Page to my specifications in record time. He built links to the video clips, audio clips, short excerpts from texts, etc., that I'd selected. We used Daedalus to allow students the freedom to write and conference with each other. The cost was minimal because we didn't try to come up with expensive movie footage of our own. I used the videodisk Eyes on the Prize during face-to-face class sessions, and we had some library video material licensed to the university that we were free to link to the class home page. Other links to sites around the country were provided by Len Hatfield, and we hoped students would find their own. Then we waited to see what would happen.

The students loved the courses. For Mary Beth and myself as we continue to talk and begin to write about why the experience was so important to us, it was a process of renewal. The number of interactions between faculty and students can easily quadruple in classes where conversation is electronically mediated. Some students contacted us several times a day. What struck me was students' willingness to look at the course and offer feedback about it, not just in terms of whether they 'liked' it or not, but in terms of what connections they could make now that they hadn't been able to make before. Connections that were not discipline-bound or limited by historical assumptions. An automatic record of what went on in the class was kept because Daedalus, the integrated writing software program, allows for storage of data by students' names, subject categories, etc. We also had the WebChats on record, listserv files, and stored electronic versions of multiple drafts of research papers.

IV. Conclusions

Whenever I become distressed by the relatively slow rate of change at our institutions of higher education, I think about the students Mary Beth and I had in our classes this summer, and how they easily

they embraced the positive aspects of the technology and discarded the rest; how willing they were to try new approaches, even when servers crashed or files disappeared; how thrilled they were by the wonders of what they saw; and, most importantly in the case of some of the minority students, how they claimed ownership of the pieces of knowledge they gathered, synthesized them, and began to see how connections can be fruitfully made over time. One of them showed the football team how to access the Internet; another is now assisting David Taylor in his assessment of ACCESS. It was not all sweetness and light. It was extremely hard work, and it would not have been possible without the support of people like Hyoejin Yoon, the graduate assistant in my class, or Michael Leahy who provided such valuable technical support to Mary Beth and myself.

I have often heard people say that we need to teach students how to work well in their chosen careers, give them useful skills they can apply in the workplace. They are right. And those of us involved in liberal education like to think we do that too. We also like to think that we are preparing students as much for the jobs they will take as we are for what they will do when their jobs evaporate, or their parents die, or the economy takes an unheralded downswing, or their boss invites them to work abroad.

If professional education prepares students for a particular job, a liberal education has a similar function, but it also prepares students for the spaces in between. If some of the very notions we have founded our culture upon: the five-day working week, the ratios of work to leisure, travel, job security, retirement, etc. are in the process of undergoing extraordinary change, we need to equip students with the survival skills they will need in order to survive.

We can assume nothing. We want to have something of value to hold on to when the universe changes on us. As educators, if we hear nothing because we are too busy focused on sustaining a present that is no longer economically or culturally viable, we will wrap our students in silence. The key has always been their voices. The hard thing has been to remember to invite them to speak, listen to what they are telling us, and then go from there. We need to know what they do and don't know, before teaching them what we think they should understand. If indeed as James Burke suggests, we can only examine the unknown in terms of a known structure, then we must do all we can to make the structure more flexible, even at the risk of jeopardizing the existing structure altogether.

I firmly believe that higher education has a vital role to play in the education of our children. Certain educational models allow us the freedom to work together to find solutions. If Cyberschool, ACCESS and similar models prove to have that kind of capability, then we should adapt them for other purposes. One thing is clear: educators are going to be expected to be even more thoroughly acquainted with their students in this new environment than they were in the old. And we are going to have to try to find out the answers to the question of how students learn before trying to overload them with information. Access alone, even when students are fortunate enough to have it, will never be enough.