Alternative Futures for Distance Learning: The Force and the Darkside

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Abstract
There are forces at work that are going to reshape the practice of distance learning and higher education in the United States. Technology only enters as an opportunity to channel these forces in very different directions. The channeling process is really that of administrative and management practices and policies that govern the utilization of educational technology and methods. While there are desirable futures possible it is becoming evident that many current practices and related economic forces can result in a future that is quite analogous to the "darkside" of the force.

The views expressed in this paper are solely those of the author and do not necessarily reflect the official views of any organization with whom the author may have an affiliation.

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Introduction

Before taking up the objective of this paper I wish to first make it clear that I, and the others with whom I have worked with in this field, have long been an advocate of utilizing the computer for facilitating the communication process among humans and in groups (Turoff, 1970, 1972). Our view of this technology has always been as a force for positive change and improvement in the field of group communications and for learning as an important component (Hiltz & Turoff, 1978, 1993).

Since we began the operation of the first version of EIES (Electronic Information Exchange System) in 1976 at NJIT, we used Computer Mediated Communications to augment our regular classes by allowing a stored class discussion to continue in an asynchronous manner throughout the semester. It did not take us long to arrive at the conclusion that this greatly facilitated the ability of the instructor and the students to engage in continuous and in-depth discussions about the semantic and pragmatic content of the material. The potential for both education and training at all levels became obvious (Turoff, 1982, 1986; Turoff & Hiltz, 1977, 1980). This quickly led us to a number of hypotheses on the potential benefits and to seeking funds to examine the consequences of this technology on the educational process.

Our Annenberg/CPB project in the 1980's was perhaps the only major quasi controlled experiment that compared the use of asynchronous conferencing to deliver courses with matched standard face-to-face courses across a wide range of subject disciplines (Hiltz, 1994). These comparative matched field trials were carried out with regular on campus students and not with distance students. Therefore we were dealing with students who were comparing this new experience to regular face-to-face classes and not to correspondence courses. They showed the that the Virtual ClassroomÔ alone was just as effective for learning as the regular face to face course and also had a number of significant auxiliary benefits. In at least one subject area the students did statistically significantly better in grades. Currently we have added both video tapes of lectures to accompany the use of Virtual Classroom and the availability of WEB based materials to the two undergraduate degree programs (bachelor degrees in Computer Science and in Information Systems) that we offer in a distance mode. Now at NJIT we are adding a growing number of graduate courses and undergraduate bridge courses for Master degree programs.

In our personal view, as educators, the ability of the computer to structure the communication procedures and protocols around the educational application and the nature of the learners was leading us to a quantum improvement in the educational process. Improving

the ability to hold direct communications with a much greater number of the class members and to encourage the equality of student discussion as well as the introduction of collaborative learning methods provides results that could not objectively be measured in the traditional exam and grading approaches.

In the case of the distance student one significant benefit of the technology was the ability to allow us to merge our on campus students with our distance students into one asynchronous conferencing based class. The distance student received videos of our face to face lectures and everything else was now equal for both the distance and the on campus student. The distance and the on campus students were both part of the same class discussion, did the same assignments in the same time frames, and could work on the same project team.

Distance students and on campus students were integrated in a single Virtual Classroom and treated as one class.

The vision that many of us have had for this technology is clear in the literature (Hiltz, 1992,: Harrisam, et. al. 1995). What has happened, however, is the classic problem of technology transfer. Now that the use of asynchronous communications for education and training has been popularized into the rapidly growing metaphor of Asynchronous Learning Networks (ALN), many of us have become more than a little upset at some of the misconceptions and misapplications beginning to occur with respect to applying computer networking to higher education.

Historically it is no comfort that this is the process that often occurs when new ideas based upon visions become popularized and introduced with a limited understanding of the their roots (Turoff, 1989). Furthermore the administrative practices, management, and policies currently associated with distance education (in Higher Education) are encouraging exactly the wrong approach to utilize the technology to improve learning and increase the quality of the educational delivery process. It is quite clear historically in the field of Management Information Systems that new information and computer system technologies can be misdirected if the underlying human organizations and customs (i.e., culture) are not adapted to make the best use of the technology. History now seems to be repeating itself in the area of higher education.

This paper addresses the underlying administrative, management, and policy issues that affect the introduction and utilization of ALN and emphasizes how they can potentially bring about surprising negative impacts on the resulting educational delivery process and the institutions involved. The material here is based upon observations in the U.S. and the degree of generalization to other countries is unknown. However, distance education is already crossing international boundaries and we will soon be entering an international marketplace in distance education. Since the U.S. is today more of a competitive marketplace (Turoff, 1995) in higher education than most other countries, what is happening in the U.S. today may be a forecast of what might occur worldwide in the future.

The marvels of technology present us with many alternative options for the future of learning. However, it is not the technology but a vast combination of social, economic, and political factors that will influence the way we will actually employ this technology in the future. We are beginning to understand that the introduction of Information systems into organizations that have human problems often worsen those problems. The use of the technology alone as a cure of human, managerial, and organizational ills in education can also have disastrous results. This paper looks seriously at how institutional policies and practices can influence outcomes of employing

new technological approaches to learning.

The Force

In the U.S., college tuition can range from approximately $3,000 to $30,000 for an academic year. Recently the concept of the average student being right out of high school has been overturned and the majority of college students have been, or are, in the work place. They are older, may have a family, and are possibly part time students. They do not get much financial aid and student loan programs are not anywhere as generous as previously. The result is that the college student is becoming more of a mature consumer who is serious about finding the college program that will produce the best possible outcome for what he or she can afford to invest.

Many of the distance students we are attracting are not in remote areas but they are people with job and family commitments that force them to realize that the two to three hours of local travel to attend a course is far to precious to consider face-to-face classes if the remote course will be just as effective. Many distance students being attracted to the ALN programs are the more valuable employees who never considered that they could take the time needed for regular courses. At the graduate level students in technical fields seek companies for jobs that will pay for their courses on a part time basis. Clearly many of the current ALN programs have been designed to "skim the cream" of the crop that these students represent.

Higher education in the U.S. does not have a very effective lobby and many state supported institutions are facing, at best, semi-static budgets that are in effect cuts that cause increased tuition. The true costs at most state institutions would result in a tuition $15,000 or more if the student had to pay full costs. Outstanding private institutions cost about $25,000 but are subsidized, in addition, by endowments.

In a recent paper (Turoff, 1997) it was shown that one could start a pure electronic virtual university for about 2000 students with a tuition of around $15,000, where every single faculty member was paid a flat $150,000 a year and class size would be in the 25-30 student range. The initial funding to get off the ground would be fifteen million dollars. This would also allow each accepted student to take some initial courses free of charge. This cost is less than a new building on most college campus in the United States. Clearly there are no colleges where all faculty get that salary but if it did, it would certainly attract a faculty of top educators. Today most institutions would rather spend that chunk of funds on a new building. That is part of the problem we are going to be discussing in terms of management objectives in academic environments.

At many institutions distance education is a separate administrative operation from the academic departments. Furthermore, the administration of distance education and the responsibility for the delivery of the courses is often in the hands of the distance education administration and not under the faculty in the department that normally has the academic governance authority over the face-to-face courses and their content. A significant percentage of the courses in distance education, at a growing number of institutions, are taught by adjuncts and non faculty staff. Since the cost of such courses is usually lower, the administration comes to view such programs as a sources of a "profit" in the cash flow. The distance learning operation often works on a fixed fee and the remainder of the tuition paid by the student is returned to the general budget funds.

Summary: Properties of the Force

- The World Wide Web and the Internet make ALN's (anytime, any where) delivery of courses by computer networks a viable alternative for millions of students.
- As a result of costs, college students are becoming intelligent consumers.
- Costs of tuition are continuing to rise and no end is in sight.
- Public funds for higher education are decreasing on a relative basis.
- The typical college student is older, working, may have a family and will likely be a part time student.
- The typical student will consider distance courses a viable alternative and in some ways more effective for their efficient mastery of the material.
- No institution of higher education will have a geographical monopoly they can count on.
- Institutions in the US are viewing Distance Education as a magical source of money.
- Institutions are viewing distance education as a source for new students who are both talented and well to do.
- Administrators are after technology that will automate the delivery of material with a minimum of academic person power.
- Institutions offering similar programs will be in very direct competition even though they may be thousands of miles apart.
- Many students will have to rely on support from the companies they work for and the companies will want programs that improve the short term benefits of the student to the company.

Commercialization

Commercialization of the field of higher education is probably the most visible of the consequences of the force. There are companies in the U.S. that allow employees they fund for a higher education to sign up only for courses that they feel are consistent with their objectives for the employee. Most surveys of industry views and academic views of what is important subject matter, even in the technical fields, show significant differences of views. This difference is often associated with short and long term views of what is important. The common goal conflict is between learning fundamentals (e.g., the theoretical constructs for any computer language) as a basis for life long learning ability and training for specific current skills (e.g., a course in Java) desired in today's marketplace.

There is also a view by some universities administrators that if we just put our courses on the WEB with some programs to give exercises and some adjunct faculty, teaching staff, or student labor to run a hundred students per section, then thousands of students will flock to these "automated" courses and all the financial problems will go away. The U.S. has invested sizable capital into trying to establish local colleges so everyone had easy geographical access. These will probably be the first institutions to be hit hard by distance programs from major universities and from commercial sources of training. Current trends seem to indicate that there is going to be a tremendous long term shakeout of marginal institutions that cannot deliver quality education or meaningful full degree programs. Today you can buy videos of "lectures of Harvard Professors" on the open market. We are entering a period of what may be intense competition and commercialism for higher education that will spread beyond national boundaries. The commercial training programs to aid students to prepare for the GREs, GMATs, and MCATs are indications of the future. Does the student perform on these examinations of college abilities because of their college education or because of the training programs for them?

There are a number of commercial companies that advertise that they will create a virtual university/college on the WEB for any institution. They will come to your college and in five days train the professors how to transfer their courses to the WEB, how to teach on the WEB, and they will manage the whole operation for you. It does not matter to them what subject you are talking about, they have **a single approach** that is suppose to work for any discipline and any degree program. They quote numbers such as, it will take a professor only thirty hours to convert his or her existing course to the WEB. To those administrators that think that faculty are nothing but a problem, this is music to their ears! It recalls for those of us in Information Systems the echo of the efficiency expert in the factory and the process engineer in the office. What it suggests is the assembly lining of higher education. It is the same "automation" approach that has gotten countless companies in trouble. There is no awareness that the best way to teach by using the technology may be completely different than what is normally done in the physical face-to-face environment. There is no recognition of the need to rethink the education process and the associated methodologies.

The growing number of these academic consultants and WEB based real-estate developers for the virtual campuses are evidence of the commercialization process that seems to be overtaking higher education.

Commercialization can bring about the homogenization of the educational delivery process.

A secondary, but no less worrisome force, is that many companies are backing off from their sizable investment in internal training programs are turning back to colleges and universities to take up the slack. They find the idea of distance education attractive to reach their nationally and internationally spread workforce. However, they speak in terms of such concepts as "just in time training" like learning is analogous to an inventory system. They confuse learning and training and are pushing institutions to offer small chunks of education such as certificate programs that are also degree accredited.

While there is a role for colleges and universities to deliver training, the traditional objective of higher education is to deliver a product to the "student" that is the "mastery" of the subject and allows him or her to advance their career even if that means giving the student the ability to get qualify for a new job in a different organization. We attempt to provide the student with the fundamental knowledge needed to continue learning on their own and do not emphasize a particular current technology or skill. Concepts of "just in time training" and training in current technologies, in limited packages, is an educational mission that serves the company and not the student.

With industry picking up an increasing share of the costs of tuition for students they are beginning to influence the objectives of the educational mission and it may not always be in a direction beneficial to the interests of the student. This may be a more long term force of commercialization than the prior one but it is probably a more dangerous one.

The educational objectives of industry and those of universities are not necessarily consistent.

The Erosion of Tenure

While there are movements to try to do away with tenure in the educational system in the U.S., it is not the more obvious lobby efforts that are worrisome. What is of concern is the subtle administrative practices that can, over a long period of time, significantly reduce

tenure as an important component of higher education and eliminate the safeguard it represents for the educational process.

The more insidious approach is the hiring of full time "qualified" staff to do teaching and the necessary use of adjuncts. Young untenured faculty are hired in great number and they are encouraged to focus on research and seeking funds for research. They are alleviated from teaching many undergraduate courses and these are taken over by full time staff, regular adjuncts, and even "visiting" professors. While the untenured faculty think this is fine, it is fundamental change in higher education objectives by decreasing the importance of faculty performance in education at the undergraduate level. What is not realized is that some of these untenured faculty are being groomed for those staff positions when it becomes clear they will not succeed to get tenure. What they are judged on is their ability to bring in research funding and generate publications. Of course the long term implication of this is that the tenure decision is no longer viewed as important or serious. If they don't succeed they can become staff. They will end up as contract research appointments or full time teaching staff. The condition to get tenure will become so stiff that only a negligible number will get through that filter. A few decades of this and the tenured faculty will be a true minority of those teaching and gradually fade away.

What we then have is a growing number of educators who have no independence of view and are totally beholding to the administration for their jobs and their livelihood. This in the long run forces the system of higher education to conform to the short term pressures of the marketplace and growing commercialization. There was a time in this country when only two universities were left that had outstanding physics education and research programs in optics and all others had given it up as an unproductive investment of resources. And then someone invented a working laser! With more and more of the tuition costs being paid by industry the voice of industry as to what should or should not be taught will become a strong determinant, if tenure disappears, of what is taught.

The real reason for tenure is not to just protect minority views of educators but to protect the educational process and associated academic decisions on what is taught from the influences of short term market forces, technology change, economic pressures and associated commercial interests.

We begin to see today degree program in some technical fields formulated around advertised jargon in the marketplace rather than meaningful bodies of scientific and technical knowledge. It is like a degree in sociology would become a degree in the behavior of the X-generation because advertisement firms wish to hire people who can graduate and be prepared to immediately design adds for that market group. Industry is sometimes more interested in the student being certified in a particular software system then in obtaining an understanding of the fundamentals and theoretical principles that underlie all such systems.

Over the past few decades many institutions in the U.S. have gone from situations where the majority of the salaries at the institution were faculty salaries to a situation today where a majority of the salaries are in administration and non tenure lines for research and teaching staff, sometimes referred to as research faculty, adjunct faculty, and/or fellows.

Faculty and Adjunct Compensation and Considerations

New Jersey Institute of Technology (a state funded University) numbers are used here to illustrate some important quantitative results.

The quantities quoted in this section are the results of taking the NJIT budget report to the state and doing some reverse engineering on the data given to infer some useful information not directly quoted in the document. University budget documents are notorious for not reporting the variables that could tell you something about performance. It may be that the process of competition will change that in the long run. Not all aspects of the marketplace are negative for higher education.

Dividing the instructional salary ($26,262,000) by 300 faculty members we have the average faculty salary of $87,540 that includes approximately 25% overhead and a normal teaching load of 6 courses a year and two units for research and administrative activities. Therefore, the faculty cost for a course is around $10,942 (1/8 of the $87,540).

Ph.D. students all get involved in teaching a course, grading material, and/or running problem sections. Their compensation including tuition is about $15,000, for which they may be involved in teaching two courses or aiding in four by grading or conducting problem sessions. It is fair to consider this an average of three courses. So the average cost when a Ph.D. student teaches a course is $5,000. However, it is usually considered that learning to teach is part of a Ph.D. student's training and usually he or she would be mentored by the faculty member in charge of the course and be provided with the faculty member's notes and materials. Furthermore, in the VC environment (use of a conference system) the faculty member can actually "listen in" on what is happening and dynamically guide the student or step in when needed by reading the evolving conference.

Finally, we have the adjunct who is hired from the outside to conduct a course and the standard fee for this is approximately $2,500. In principle the academic department is in charge of insuring the quality of the people doing this and it is certainly true there are a number of excellent industrial people and ex-students willing to do this for the experience and pleasure rather than the pay. However, there are still times when individuals are brought in who do inadequate jobs and fail to really accomplish the objectives of the course.

The key is that the administrative level is the wrong place to insure quality; that task has to be done by a faculty member who must have some degree of responsibility for the particular course and its content. In general, the pay scales are too low to insure that all adjuncts perform at the level of quality they should, and there is no incentive for faculty to mentor these adjuncts in the same manner that they would doctoral students.

With all the emphasis on using adjuncts to save money one has to wonder why administrators have not discovered the concept of the **"adjunct administrator."** This could a retired executive or downsized manager hired on a part time basis to analyze and make specific management decisions. All the arguments made for use of adjunct faculty should apply equally well to saving the costs of management overhead through the use of adjunct administrators.

Economic Force
- Faculty $11,000 per course
- Ph.D. Student $5,000 per course
- Adjunct $2,500 per course.

What we have now is a situation where the administrative incentive is to hire adjuncts rather than to finance Ph.D. students. Given a climate of declining funding this sizable difference in economic incentive becomes a force of its own. This may be even truer in the

typical distance operation where somehow these are students who are considered not quite as important as the on campus students.

It would be a far more reliable administrative incentive to increase adjunct salaries to be comparable to doctoral students and to pay a faculty member a royalty to provide course materials and the mentoring of the adjunct. Furthermore, the use of conferencing technology would allow faculty to directly monitor the course being taught by the adjunct and provide dynamic oversight.

The use of conferencing like technology for class discussions means there is a complete record of all the class discussion and the assignments that have been done online. Such a transcript is far more informative in determining the lecturer's ability to educate than the usual end of course survey.

In the future we would hope such transcripts become the evidence of teaching performance both on the part of faculty and adjuncts for advancement and retention. Furthermore, just as accreditation reviews sample course exams and assignments, they should have samples of course transcripts to evaluate.

Though it is not reported we can further infer in the NJIT case that the amount of teaching by adjuncts and non faculty staff of credit courses is about 30% and growing. In some departments it is over 40%. If institutions can provide credit courses utilizing instructors who are paid a fraction of regular faculty pay then the very serious question will be raised by those paying for the education (public or private institutions) as to why those higher salaries have to be paid at all. If it is further true that instructors can be eliminated or handle 100 or 1000 students in a course because of the development of the "magic multimedia intelligent trainer," have another new force at work.

Associated with the salary differences is the issue of ownership of the course materials and related videotapes and software. This is a major labor-management issue at those institutions that have not fully recognized faculty ownership and established the conditions under which such materials may or may not be used by adjuncts. Currently many institutions provide faculty rights to course materials for the purpose of ownership of textbooks but they have introduced far more limited rights with respect to software and videotapes. The technology is moving quickly to the point where a book is going to become software (including programs, video, and sound material) and that is going to lead to much conflict since all these nice distinctions completely break down. The Collaborative Hypertext concept would lead to dynamic knowledge bases developed collaboratively by the students and the instructor (Turoff & Hiltz, 1995) and updated with each new offering of the course. It would completely replace, in the long run, the text book and each new course offering would provide a CD-ROM of the current state of the knowledge base.

The sizable difference between adjunct pay and faculty pay is exactly what leads to associated labor - management problems and some mistrust of administrative intentions on the part of the faculty. It is an unhealthy long term motivation factor. All this might sound like a great economic opportunity to administrators. However, now that students will be able to select a single degree program from hundreds of offering Universities they will also be able to buy and will pay for impartial assessments of the quality of these alternatives. Independent evaluations of not only programs but specific instructors and courses will also become commercial commodities on the WEB (Turoff, 1995). After all a year of college is like buying a car and one can now purchase evaluations of cars on the WEB.

The use of adjuncts is actually an important slack resource that needs to be employed to allow for swings in load requirements that can occur because of short term research commitments. Furthermore there is justification for some number of full time teaching staff to handle the training missions of the University. However, adjuncts and teaching staff should be under the direct supervision of the faculty in charge of a course and they should be reviewed by the appropriate faculty committees to be qualified for the courses they teach. In many situations such as separate distance learning programs this is not the case. In some institutions there is no uniform policy on the supervision of adjuncts or full time teaching staff and it is resolved on a department by department basis.

Adjuncts and full time teaching staff should be treated in the same manner (pay, oversight, mentoring, etc.) as Ph.D. students.

Performance Throughput Rates

It has been a major surprise to many people at NJIT that about 80% of those enrolling in our distance credit courses based upon the conferencing technology are our regular on campus students. The first reaction of some administrators was to suggest that we should forbid on campus students to enroll in distance courses. Clearly the students recognize that courses taught this way can be as good as face-to-face courses. A careful examination of the throughput rates at our institution gives us another important reason why this is happening.

The following table indicates the head count and the FTE (Full Time Equivalent) numbers for the academic year of 1996 and summer. The third column computes the resulting average credits taken. Full time undergraduates take only 30.6 average credits. However we allocate 149 FTE's from the summer to make the average full time credits 32 (second line).

For the part time students we see the average credits are 10 for the academic year. However, if we allocate the remainder of the summer FTEs to the part time students we get 13.4 average credits. For these average credits we can then calculate the number of years it takes a student to graduate. We note that for the part time students at NJIT this can be anywhere from 9.6 to 12.8 years for an undergraduate degree.

These estimates are very optimistic because there are no data on the number of students who withdraw or who fail a course. We would need data on the number of repeated courses to obtain a better estimate and that would increase the length of time. In Computer Science my impression is that that this could easily be 20% or better of enrollments. If this figure were 20%, then if the average length of time to complete a degree were five years this one factor would add an additional year.

For graduate students we note that there are more FTE's than there are full time students. This is because students will try to take 15 credits a semester to finish the typical Masters in one year. So we have readjusted the graduate credits to 30 which is the requirement for the typical master's degree. This is the second entry in the FTE cell. Finally we allocate the summer FTEs to make the Full Time students truly full time and then allocate the remainder to the part time which brings us to 610 FTE's at 30 credits per FTE.

For the part time students we find the average number of credits taken is between 7.7 and 8.4. These numbers are optimistic when one factors in that there are things like seminar courses that are for credit but do not count toward a degree. In addition, we are not including any credits given for teaching or taking makeup courses such as English (for foreign students) or bridge courses to make up

undergraduate deficiencies. Also we do not have data to factor out the Ph.D. students who are taking research and thesis credits. Based upon the above a part time graduate student will take 3.6 to 3.9 years to complete the same Masters degree that a full time student may complete in one year.

The final column recalculates the years to degree under two conditions. One is that the introduction of remote learning allows the student to take one more three credit course than he or she is now able to take during the whole academic year and summer. The second condition is that the student is able to take two additional courses during this twelve month period. The assumption is that that the time saved by the student in not having to commute to campus and the flexibility of participating at the times of their choice allows this increase in efficiency. Certainly the working student cannot take advantage of summer programs as they meet four out of five days a week for six weeks.

Summary Table

	Head Count	FTE	Average Credits	Years	Years with DL/VC
Undergraduate	3,356	3,207	30.6	4.2	
Full time		3,356	32.0	4.0	
Part time	1,698	533	10.0	**12.8**	**9.8 / 8.0**
		711	13.4	**9.6**	**7.8 / 6.6**
Summer	2,203	327	4.7		
Graduate	625	763(24)	29.3	1.0	
Full time		610(30)	29.3	1.0	
		625(30)	30.0	1.0	
Part time	2,184	700(24)	7.7	3.9	2.8 / 2.2
		560(30)	7.7	3.9	2.8 / 2.2
		610(30)	8.4	3.6	2.6 / 2.1
Summer	400	81(24)	4.9		
		65(30)	4.9		

The results are rather astounding:

- The addition of one course during a year is a two to three years saving for the undergraduate part time undergraduate and one year saving for the part time graduate student.
- For the two course conditions the possible saving is 3 to almost 5 years for the undergraduate and 1.5 years for the graduate student.

Nine to thirteen years to get an undergraduate degree is a very long time and the fact that distance education offerings can knock three to five years off of that is a significant benefit that the part time student intuitively recognizes. I have had a number of on campus students tell me that they would never have been able to complete their degree without the distance offerings. Since they have started their degree they have married, had children and gone through a number of job changes. This is why our distance learning courses are so popular with our regular on campus students. They recognize immediately that they solve conflicts in course offerings and closed sections. If a student is unable to take a course in a required sequence, he or she can lose six months in just solving the prerequisite problem. Even full time students face the problem of closed courses and conflicts in course offerings. With current budget pressures fewer sections of a course are a natural consequence.

Distance offerings of courses benefit the regular on campus student whether part time or full time.

Budget Paradoxes

Now we come to an example of a management paradox. Currently the office of Distance Learning at NJIT receives one fee for each true remote student and a much lesser fee (like 1/3) for each on campus student who takes a distance learning course. The on campus student taking a distance course needs the same exact services from the distance learning office as the true remote student. They have an unsolved problem in providing the resources to handle this flood of students they are not supposed to have. Of course, the first administrative knee jerk reaction is: "We should forbid on campus students from taking distance courses!" Fortunately we have not done that at NJIT but it was suggested at one point quite seriously.

This is a holdover from the perception that these courses are only for remote students. Just as a majority of today's college students do not fit the model of a fresh out of high school entrants to college, so in the future one could predict that:

A majority of the course work at universities and colleges will be done remotely and the distinction between distance and on campus student will disappear.

Essentially the choice in the future is whether the regular student wants to come to a face-to-face lecture with material projected from a computer or whether he or she wants to see the video and audio clips prepared by the lecturer through the WEB or on videotape. The number of in class lecture hours for a course will go down as the real discussion moves online.

The area that needs considerable rethinking is the budget allocation process and the associated role of distance learning. In the mode in which many of us teach, which is the merging of our on campus face to face students and our remote students into a single virtual class, the distinctions that currently exist make no sense whatsoever.

If the distance learning operation at an institution is done right it will gradually put it self out of business as an operation

separated from the rest of the institutional organization.

The view of the distance learning office is usually that their objective is the service of the remote student. We are entering a world where students need the flexibility of determining when they are remote and when they are not. A clear distinction will be hard to maintain and gradually become meaningless.

There are many aspects where the distance learning program has significant impact on the regular program. For example, the presence of videos of class lectures in the library has been a significant aid to the regular student who has missed one or more lectures because of sickness or work commitments. It has also proved useful for those with language problems who need to listen more than once to a lecture. However, there is no library mission or budget to provide the tapes of courses for access by regular students. As a result the tape collection availability is a far more limited in hours than the normal hours for the library. The tape library comes out of the distance learning office budget and not out of the library.

All organizational units at a college or university have to integrate distance learning objectives and functions into their fundamental student services and student functions.

We can look at many similar items in the budget and management objective structure that are holdovers from the past and being applied to shape the future. We suspect the same pattern exists at many institutions that are growing distance learning programs without carefully revamping budgeting and management incentives. The real root of the problem is:

The fallacy of assuming that the institution is dealing with two different student populations (on campus and distance) when in fact one is going to become impossible to differentiate from the other.

One might say that many institutions are approaching distance learning by walking into the future backwards.

The consequences of this are many budgeting idiocies such as where the distance student is paying for the costs of classrooms they never use and the opportunity to use the income from distance students to improve the distance program is non-existent. Once there is explicit clarification of the goals of distance education then it is clear the budgeting process needs to be designed to encourage the accomplishment of those goals. It is often the lack of consistency between objectives and budget practices that is at the heart of the difficulties of innovation in organizations.

Future Alternatives
Early in the evolution of work in Computer Mediated Communications and the Virtual Classroom for learning it became clear that the objectives we sought were:

Communications and Group Oriented Distance Learning

- Improved discussion
- Equality of discussion among all members

- Use of collaborative learning approaches
- Student feedback that allowed us to determine how well we were doing.
- Making learning about a topic interesting and challenging on both an individual and group basis.
- The instructor as expert and process facilitator
- Complete rethinking of courses for obtaining quality improvements made possible by the technology.

When we talk about software to support this area we talk about communication protocols and human roles built into the software to aid the instructor in promoting equal participation and facilitate the communication process. We see an instructor as having a mental model of complex problem solving in that domain and trying to convey to the students the structure of that model and how to adapt their thinking process to learn and integrate that model. Whether it be engineering design, computer programming, literary analysis, historical understandings of events, or whatever, it is still that fundamental endeavor. When we talk about advanced software in this area we talk about Collaborative Semantic Hypertext templates that the instructor can design to allow an intense discussion to be come self organizing (Turoff & Hiltz, 1995). We also have considered and seen the possibilities of incorporating learning techniques such as asynchronous gaming (Hsu, et. al., 1992; Worrell, et. al., 1995).

We discovered very early that these objectives did not come without a price and that price is "information overload" (Hiltz & Turoff, 1985). Many of the features we have evolved were designed to allow active discussion groups without overloading the individual members of the group. Given the current state of the technology, which still lacks self organizing discussion structures that the instructor can tailor to the problem domain, we see current limitations on collaborative classes still in the 20-40 member range. With dual instructors in a single course maybe 40-60 is possible for some types of courses.

The effort in this type of learning environment is linearly related to the number of students.

This type of approach bears no relation to CAI (Computer Assisted Instruction) and the idea of software systems to teach skills and to train on an automated basis. However, we see many instances where the interpretation of the use of communications is to have a faculty member present taped lectures and have a graduate student or staff person conduct question - answer conferences with no attempt at collaboration and no real involvement of the actual faculty member to facilitate and guide the students. When it is done that way it can lead, obviously, to lower cost course delivery efforts with large course sizes.

The Darkside of Distance Learning

- Maximum number of students
- Minimum costs
- Course multimedia notes and assignments for use on the WEB.
- Multimedia material includes video and audio clips to replace lecture.
- Animation to replace derivation type instruction.
- Teaching assistant (student, staff) to answer questions by individual students.
- Adjunct faculty or staff to back up what TA can't handle.

- Third level in hierarchy might actually be person running course and appearing on video clips but only to handle unusual problems.
- CAI and other software to allow the student to conduct skill building exercises.
- No group but individual students repeating an automated version of the correspondence course.
  with one TA for every 50 students we can have unlimited number of students in a single offering.
- Students can start at any time and end at any time and a course becomes continuous operation.

There is really nothing wrong with any of the components to the Darkside when they are used appropriately to develop skills and in effect offer training to the student. There are software systems that can check for good coding so that an instructor does not have to spend his or her time reading and checking every program written by a student. But they will not teach a student the pragmatics of how to decompose a particular application for a program design except for essentially trivial examples. The advantage of automation for skills is that it can free the faculty to teach the stuff that cannot be automated.

Once a body of subject material is so well understood can be delivered by the Darkside it will probably be offered quite cheaply as a commercial software package presented as a product in training and/or self learning. At this point the material is probably no longer worthy of what students in the future will expect of a university education. This future may take twenty or thirty years but it will come.

The future of the University may be the return to the early roots of an educator and a group of students engaged in an explorative dialogue on a specific problem domain with the students using the power of dynamic (multimedia) Hypertext to evolve their associated skills.

If it can be automated is it really a university level education?!

Accreditation of Distance Learning

The Middle States Association of Colleges and Schools (which is one of the U.S. regional accreditation agencies) recently issued, via the Commission on Higher Education, a policy statement on Distance Learning (2/97). This is a very significant document that if taken seriously and if enforced will go a long way to improving the current situation with distance learning in the U.S. Until now accreditation reviews have paid little attention to what was going on in this area.

One suspects that, until recently, the common administration view of distance education was that it was a source of revenue. If one could offer distance courses at higher costs to the students, provide less in administrative costs, and also utilize adjuncts to provide most of the courses, the results would be a significant profit generating operation. By organizing it as a separate administration unit the usual department and faculty quality controls could be avoided or minimized.

The Middle States document appears to recognize fully that the "use of information and distributed technologies has also allowed institutions to develop innovative instructional methodologies that enhance and complement learning in the traditional classroom environment." However they are still one step away from recognizing that those same technologies can completely remove the distinction between distance learning and normal classroom learning.

What they do recognize is:

> "Educational programs conducted off campus, or special programs offered on-campus, must meet standards comparable to those of all other institutional offerings (Characteristics of Excellence in Higher Education, p. 14)."

What is significant is the interpretation of the above guideline in this new document and we will only select out some items specific to this discussion:

The institution's programs holding specialized accreditation meet the same requirements when offered electronically.

Clearly this means there should be no distinction on inputs or outputs associated with either program and that integration is one desirable approach to accomplishing this.

Program Support
Qualified faculty provide appropriate oversight of the program electronically offered.

This is specific that is needed as general policy through out higher education. This is defied in any situation where administrators choose adjuncts and where there is no responsibility of a faculty member to oversee or mentor a course taught by an adjunct. This should apply to regular courses as well.

The program provides faculty support services specifically related to teaching via an electronic system .

The program provides training for faculty who teach via the use of the technology.

In these times of tightening budgets the new common administrative view is that faculty should start buying their own equipment. However, this does not solve the need for specialized peripheral equipment to handle graphics, drawings, digitization, and multimedia (video and audio recordings) that needs to be provided in a multimedia lab environment where faculty can process their own materials. A true multimedia workstation with adequate peripheral equipment is still in the seven to ten thousand dollar range.

Communications
The program provides for appropriate real-time or delayed interaction between faculty and students and among students.

It is a pleasure to see a realization that electronic mail is no longer considered sufficient and that some sort of group communication processes will evidently be required. At least that is how I would like to interpret that phrase!

Service Integration

Enrolled students have reasonable and adequate access to the range of student services to support their learning.

Many institutions have significant auxiliary services such as tutoring, counseling, librarians, etc. that are not yet provided to the distance students. For example, in a recent case of potential cheating the Dean of Students offices was at a loss as how to hold a formal hearing (as required) when a distance student was involved.

Promotion and Tenure
Policies for faculty evaluation include appropriate consideration of teaching and scholarly activities related to electronically offered programs.

Here is the crux of a trend that will change the nature of college education. Adjuncts and staff are not going to receive the resources and time to engage in scholarly activities. Their knowledge of any field that is in evolving is going to deteriorate over time and so is their ability to teach timely material or undertake curriculum development activities.

Evaluation
The institution evaluates the program's educational effectiveness, including assessments of student learning outcomes, student retention, and student and faculty satisfaction.

Students have access to such program evaluation data.

The institution provides for assessment and document of student achievement in each course and at completion of the program.

We have been fortunate to have had funds from both Annenberg/CPB and Sloan to conduct evaluation efforts consistent with the above, but it is not clear this will be done in any meaningful way in most Distance Education Offices. To date they have not had to concern themselves with accreditation documentation.

Certainly the evaluation data on individual courses, programs, and faculty is NOT available to students. In the Virtual ClassroomÔ area they can find it in the nature of research reports, publications and books but they are not likely to know where to look. At some universities the evaluation of courses is done by students and published in the student newspapers. Ultimately there will be commercial offerings of course by course evaluations by outside organizations via the WEB.

Once again this is the issue of academic oversight or mentoring of any offerings by adjuncts. If accreditation agencies are going to take their guidelines seriously they need to start requiring review of the resumes of all the adjuncts being used in an academic program and not merely focus on easy measures such as the percentage of use. There is nothing wrong with using a higher percentage if the adjuncts have appropriate backgrounds and they are mentored appropriately by regular faculty who get proper credit for doing this function. Formal faculty review of adjuncts and other non faculty teachers is not currently a uniform institutional practice.

Given that we are entering marketplace atmosphere in higher education and that the student is in the situation of spending $3000 to $30,000 every year on a college education, students are becoming intelligent consumers. For the marketplace to work effectively they need to obtain the information to make informed choices of what course and program offerings they should purchase. If the institutions themselves do not supply this information than third parties will emerge to offer this material to students for a fee just as one can buy reports on and inspections of new and used cars. Let us hope that, as a result, colleges do not take on the aspect of a car dealership and faculty are not replaced by salespersons.

Related to the necessity for consumer information will be the need for explicit transfer policies that provide the student up front assessment of their remaining degree requirements. In principle accredit programs should become the national standard for automatic transfer credit.

The Nature of Learning

Unfortunately some items that appeared in the draft policy statement in September of 1996 did not appear in the final version of the report.

Every effort should be made to choose technology that supports and enhances the goals and objectives of the program. If the program requires collaborative group learning activities, the technology should support the same activities in distance learning.

That earlier document went further and pointed out that a decent computer conferencing system is required if collaborative learning is an explicit objective of the program. It is this area that truly leads to the realization that an institution cannot teach a subject one way to its regular students and choose to offer a completely different alternative to the distance students.

Our evaluation work has shown that the use of collaborative learning approaches really require courses of not much more than 30 students per section. Otherwise the amount of communication generated by the instructor, the students, and the work teams becomes unmanageable and leads to information overload (Hiltz & Turoff, 1985). Administrators feel that the WEB will allow them to put out software to support learning that will allow a hundred students per section with no problem. One can not be sure why the above item was dropped but it can be suspected that there was a protest since almost any college course now contains some degree of class discussion and this would run counter to the idea of large distance sections.

There is often a complete misconception between faculty and administrators when it comes to understanding the nature of a college education. What we as faculty believe we are doing is facilitating learning, while a lot of what is being offered through software is actually training. What we are doing is attempting to transfer our mental models of a complex academic domain to the student and the only way we can determine if we are being successful is with a high degree of feedback from the students that tells us the extent of that transfer and dynamically allows us to aid the individual student who has reached the wrong model construct.

Perhaps in the long run there is a very pragmatic observation here.

If a topic can be taught by software and there is no need for human communication, then it is no longer worthy of a university

course, but is what we have commonly come to view as training and the acquisition of skills.

The accreditation problem would be better served if the accreditation agencies realized that the root of the problem is that they should be accrediting the educators as well as the programs. As more and more courses come on to the WEB it is going to become difficult for consumers to realize what they are getting for their money. There are already courses in creative writing, poetry and other such subjects offered by private individuals over the WEB. There are a growing number of technical courses being offered by companies and covering, in theory, the same skills offered in university based courses. Most of these are cheaper than their university counterparts. Once can also expect nationwide tutoring services by companies and individuals quite similar to what has happened with the entrance exam coaching operations.

Related Administrative Practices

Two other interesting items that probably also generate some controversy from administrators and which did not appear in the final document were:

. . policies addressing teaching load, class size, time needed for course conversion/development, and the sharing of instructional responsibilities should be reviewed.

. . one of the consistent responsibilities of faculty continues to be the development and oversight of an institution's academic programs.

Trying to shoehorn the current policies into the new technology is a common approach that does not work and discourages beneficial use of the technology. Those, like NJIT, having had grants that covered some the associated conversion and development costs, had been at an advantage many other institutions will not have. But the need for improved workload policies still remains an issue that will end up as part of the labor-management negotiation process. There is a confusion at many institutions between faculty governance and union authority in a number of these areas. As a result administrations may have more power than they should have to dictate in these areas. Also as a result of financial cutbacks there has been a trend for administrations to ignore or sidestep faculty oversight.

Warped Views on Distance Education

I was pleased to the see the following dropped but that does not disguise the fact that most faculty and administrators really start with a hidden premise in their mind that distance learning is an inferior form of education.

Perhaps one of the major issues facing both providers and recipients of electronically offered distance learning programs is achieving parity with traditional on-campus courses.

Starting with such a view becomes a self-fulfilling prophecy as one will then design a system that is actually inferior. As the reader has gathered our view is that distance learning can be superior if done correctly. By incorporating the Virtual Classroom and collaborative learning in traditional courses, those traditional courses are far better than any normal traditional course. By eliminating the distinction

between distance and regular courses by merging the students into one section we have no problem in achieving parity and in achieving a higher quality level of education.

Faculty Developed Materials
This too was dropped and probably because a number of institutions are actively trying to reduce faculty rights to the materials they developed for these courses.

Faculty members generally own their notes and teaching products, which they are paid to develop and deliver. Traditionally, they control the further or extended use of those materials - both when and how they are used.

It is not clear to faculty at many institutions what this means for the tapes of lectures, the multimedia software documents, and the software programs that they develop for teaching. As a faculty member who does his most productive work from his home, I have to buy my own computer. I have no problem in putting my own copyright on what I have developed with my own resources, and to be frank, most course development is done on an unpaid overtime basis (if one were to count hours). However, the uncertainties today about this issue probably hold many faculty back from making a sizable effort in course development.

Furthermore, there are different ownership standards implied for software. Multimedia versions of course materials are really a mixture of writing and software so that the distinction between course notes and software has disappeared. The draft document also said about this and related issues:

> "it is incumbent upon both faculty and administration to engage in a dialogue on these issues and to develop policies that do not undermine the teaching/learning process."

The Organization of Distance Learning
The final item dropped was perhaps the most important but considering the separation that already exists at some institutions it no doubt raised some strong objections:

First and foremost, an institution's distance learning program must be an integral part of the institution's mission and not an ancillary consideration.

This sums up quite nicely what we have been trying to get across throughout this examination of distance learning. Given the dropping of this and other items it becomes clear we still have much in the way of future controversy to deal with in this area..

Final Observations and Conclusions
Students must be able to get departmental advisement, deal with the registrar, the library, the bursar, the tutoring center, the student dean and all the other normal on campus functions. Many of these offices do not provide WEB based access to these services. If they

did, a great many regular students would also utilize this approach since it is far more efficient for the student than the phone or having to come to campus to handle a problem.

This problem also results from the concept that the distance students are separate from the on campus students and that the distance learning office should be the only interface to the distance student. This view is really inadequate. For most services the distinction made between Distance Learning and on campus students should disappear.

Recognizing the importance of remote technology for regular courses and the integration of distance students into regular courses.

There is little doubt at this point that the technologies being employed for the distance students are or could be a boon to the improvement of the quality of education for the on campus students. Using conferencing based systems for regular face to face classes makes a significant improvement in the learning process if the instructor has the right training and attitudinal skills to employ the technology. Furthermore, it is only possible to get the synergy of a classroom atmosphere in the conferencing technology with a critical mass of active students, such as 15 or more.

Integrating distance students into regular classes another is also a way to be able to support small numbers of distance students who are interested in specialized electives without large student audiences. The technology may very well make more diverse course offerings economically feasible.

A related corollary is that:

The distinction between distance students and regular students will disappear in that local students will select when they wish to take a course via electronic technology or via the physical classroom.

Another option that is also feasible is that some courses can get along with fewer hours of lecture during the week given the sizable on line discussion and assignment activities in the conferencing environment. We have a number of courses that chosen to go to two hours of lecture rather than three. In effect the third hour used to be discussion and that is now done online. With the merger of the two, the time normally utilized for in class discussion can be reallocated to online discussions, to actually reduce the hours in class.

Large discrepancies in the pay to teach a course conveys the wrong pubic image about the quality of education. There should be economic indifference by administrators at any institution in the choice of using adjuncts or Ph.D. students. The same teaching standards and faculty oversight and control needs to apply to all offerings of courses no matter who teaches it.

Timing is an important component of asynchronous learning offerings. Most of our summer offerings stretch over the whole summer rather than conform to the two summer sessions for face to face offerings.

Three equal semesters a year would be an ideal environment for distance learning

Ultimately a three semester system for Institutions of higher learning would be an extremely desirable situation for distance courses. It would also carry considerable appeal for faculty and students who could choose to take their "summers" during any one of the three semesters. In the new environment where a majority of students are working full time and/or have families, the concept of three equal semesters a year has many desirable qualities. On the other hand the four quarter system probably leads to a too compressed time scale for asynchronous communication oriented courses. This latter point is an intuitive conjecture that could bear closer examination. Those now doing remote classes in the summer usually choose to do it over the two separate summer sessions that NJIT now offers.

Most institutions need improved tracking and measurement systems to truly track performance type measures such as throughput times for degrees and more comparative information about student performance correlated with types of instructional delivery and programs. It is amazing how little data is available in this era of institutions gloating over how highly computerized and modernized they have become.

We are entering an era of a national and worldwide marketplace in higher education programs and courses.

The networking technology for distance education is opening up all universities and colleges to competition. Students can now cross geographical barriers and take courses in any state, or for that matter, any country. The current growing cost of higher education and the trend to cutbacks of public support in the U.S. is forcing many students to put costs first in seeking an education and to act as consumers in a market economy.

Is a community college course just as good as a university course costing two to ten times more? Are two accredited programs the same when one costs a lot more than the other? Can I find an employer who will fund my education on a part time basis? If it is part time, is the distance course just as good as the on campus course, and shouldn't it save me considerable time in travel and expense?

Students will become intelligent consumers and will seek information by which to evaluate their perspective purchases of courses and programs.

Universities need to publish better pragmatic data on things like throughput rates or related job performance of their graduates. If faculty and the institutions they represent do not take the initiative to provide evaluative data for the benefit of the perspective students than others will.

Stephen Erhman (1994) in what I feel is one of the more significant policy articles in this field stated the following three challenges for higher education.

- Accessibility, especially how to reach and educate the full range of adults who deserve a chance at an education, despite their location, schedules, cultural differences, or physical disabilities;
- Quality, especially learning for the 21st century: how to improve the life chances of each of their adult learners, as individuals and as members of economic, cultural, and political communities; and
- Dealing with the first two challenges when money and political support are in short supply.

If we are going to meet those challenges it is going to take fundamental changes in higher education.

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