THE CHANGING ROLE OF FACULTY AND ONLINE EDUCATION

Murray Turoff
Information Systems Department
New Jersey Institute of Technology

ABSTRACT

Environmental forces influencing the future of higher education in the U.S. threaten to undermine the desirable role of faculty as arbiters of academic quality. For online learning to live up to its potential, institutional policies can return academic authority to faculty over degree programs in all modes and support the importance of education in promotion and tenure processes. Accreditation agencies traditionally have been a service to the institutions and the administration at higher education institutions; they will also have to become an equal service to the consumer of higher education. Consumerism will force all those concerned with the quality and utility of a higher education to focus on the quality and effectiveness of the instructors.

KEYWORDS

Academic Quality, Faculty Roles, Consumers, Accreditors, Environment, Change

I. INTRODUCTION

The structure of higher education is changing as a result of many factors forcing change, whether it is desired or not. The major factors include:

1. The ability to deliver online classes and degree programs over the internet has caused the disappearance of geographical monopolies for the providers of higher education.
2. The degree to which higher education considers services to the student or service to industry as its primary mission.
3. Increasing costs of tuition and the resulting movement to consumerism on the part of students and their families.
4. The ease of going into debt for a college education and the burden this places on graduates early in their career.
5. Decreased public funding for higher education through taxation in terms of real dollars.
6. Increased competition from the for-profit sector for the higher education market.
7. The growing use of permanent untenured teaching faculty and adjunct faculty without tenure.
8. The growing use of research faculty, also without tenure opportunities.
9. The decline in foreign students, leaving sizable shortfalls in income at many U.S. institutions and a likely permanent change, as many other Australian, New Zealand, and European colleges and universities have been absorbing a major growth in foreign students. It is unlikely we will return to the foreign enrollment peaks we were used to.
10. The decline in industry sponsorship of tuition for employees and/or more rigid requirements for which particular kinds of courses industry will fund tuition.
11. The decline of full time American students seeking doctoral degrees.
12. The current swing of American students away from degree programs in the technological and scientific areas needed to keep the US viable as an exporter of innovation.

13. The increasing proportion of research dollars going into high profile consortium oriented “safe” or “assured” research projects and the corresponding decline of exploratory industrial R&D.
14. The narrow and/or local focus of accreditation and regulatory bodies concerned with higher education.

It is not the purpose of this paper to explore any one of the above factors in any detail. Taken together they establish a set of interlocking environmental forces influencing the future of higher education in the U.S. First, our objective is to first delineate the traditional roles of faculty in higher education and to point out the changes now taking place that are being forced by the combination of the above factors. Several of these changes are removing the faculty from a position of academic authority over curriculums and the teaching process. Secondly, the paper describes a fundamental development and associated policy options that might help to minimize some of the more serious problems that could arise from the undesirable consequences of the above factors on the obligations for faculty in higher education.

II. THE TRADITIONAL ROLE OF THE FACULTY

A faculty body in a given field of knowledge is the core of what defines a college or a university. The traditional goal of institutions of higher education is the preservation of the knowledge of the academic field and the ability to convey it to new generations of learners. This is true of a teaching institution or one that also sponsors research. Research institutions add the objective of evolving and improving the state of knowledge in that academic field. The concept of tenure has served traditionally to insulate the maintenance of knowledge from the peaks and valleys of short term economic, political, and theological pressures to rewrite everything from science to history and/or narrow the focus of higher education to only that which is currently considered to have an immediate payoff. Like the focus on this year's bottom line in business, cutting curricula to include only what is currently fashionable will hurt long-term quality.

Not so long ago the physics departments in this country were reduced to only two that had any research effort in optics because it was considered as no longer a viable research field. Then lasers became available and a huge demand emerged for research and development in that field. It took almost a decade for the demands for R&D personnel in the field to catch up with demand. Predicting the next scientific or technical breakthrough or critical research area has never been accurate. While the field of computing has been the one with the most rapid change in the past five decades it is filled with incorrect forecasts by the leading experts of the moment during every major evolutionary change that has occurred.

Even at teaching institutions, tenure track faculty traditionally had some allocation of time devoted to maintaining a level of research involvement. They were also afforded chances to apply for individual investigator or small team research efforts. Traditionally research sponsors felt that a large number of small bets on highly qualified researchers was a reasonable method of finding new breakthroughs. Today's emphasis on big consortia for critical areas and the growing use of research-only (“soft money”) professors are beginning to interfere with the ability to do research at all but the most successful institutions with respect to size and reputation. This process also has an indirect effect of focusing the Ph.D. student into narrow areas of research very early in their graduate effort—usually before they have had enough exposure to the field to really realize what their alternative research opportunities are. Then of course we have the for-profits, some without any tenure track faculty at all, and a complete lack of any mission for research.

From an educational standpoint the traditional tenure track research faculty is in the best position to:

1. Create new courses to take account of evolving knowledge in the field. This can occur within a cycle of a few years. In computing it is not uncommon to have 10–30% of the course changed every year if taught by a faculty member who is current. The 10% might be characteristic of lower division courses, 20% for upper division and 20–30% for graduate courses.
2. Create new degree programs made necessary by the emergence of new fields. This is more of a decade-type cycle for change in a given field.

In many academic fields the merger of research and education is critical to having relevant upper division and graduate courses. With developments like the Internet the rapid increase in knowledge is spilling over into the humanities and social sciences. It is also greatly increasing the amount of change in the fields of economics and management.

This speed up of change and the need for educational institutions to seek increased outside funding has lead to more influence by industry and sometimes a feeling on the part of industry that colleges should be serving them rather than the student. Part of this problem is that traditional faculty believe they are providing students the knowledge they need to:

- Learn the fundamentals of a given field of knowledge.
- Learn how to learn in that field so they maintain their knowledge and currency over their lifetime.
- Continue on for graduate education then or later when they feel the need to do so.
- Prepare the student to obtain a better career in that company or elsewhere, by viewing a degree as preparation for a better career.

For example, in the field of computing many companies seem to feel that universities should prepare students for the current vendor certification program or emphasize a particular programming language or technical approach, rather than spend time on things like the fundamentals of what makes a good language and what principles underlie all languages so that the student can adapt to future changes. Companies have begun to put very specific restrictions on what courses they will fund and they must be justified in terms of the employee-student's current job environment. Another associated pressure is for the concept of “just in time” learning where courses are matched to the specific needs of an employee in the job of the moment. What used to be training courses have sometimes become college courses.

The traditional faculty objectives of higher education for the students are:

- Providing an undergraduate education that prepares a student for a possible lifelong occupation or interest in a given field.
- Providing a graduate education that prepares a student for becoming a contributor to the field as either a reporter of practice or as a researcher.

To achieve those objectives, the body of tenure track faculty in a given field (not single faculty members, deans, nor industry advisory committees) traditionally decided what was taught in given degree programs and in required courses for that degree program. The function of various accreditation bodies and professional societies was to assure some consistency and minimum quality of degree and course requirements in the same field and across the higher educational sector.

Certainly the above goals were never universal but they did represent most of higher education for a considerable period of time and hopefully still do at most quality institutions. The public funding of higher education was designed originally to allow anyone to obtain a higher education who was able to accomplish the learning that was necessary in the given field. We then went to increased costs and aid for

only those who could not afford it. Now we have moved to loans for anyone that wants to take a big risk on getting the job he was educated for. Today, we have gone to a situation where it is not uncommon for students to emerge from higher education with sizable loans that will take them a decade or more to repay.

To some extent online education has inadvertently helped to turn higher education in to an open marketplace and provided opportunities for sizable for-profit activities that are reshaping higher education. The result is an increasing chaotic market in higher education [1] where the ultimate consumer, the student and his family, have a great deal of difficulty in knowing what they are getting in a given degree program. Some administrators belittle concepts of accreditation and seem to be more concerned with how to market and what aspects of a degree program will sound more attractive to students. Funds and resources for marketing are often no longer influenced or available to departments. There are many different names of degree programs, particularly in computing, that represent similar or largely overlapping areas. This is also true in areas like business and management.

III. POTENTIAL CONSEQUENCES FOR HIGHER EDUCATION

The specific trends that are undermining many of the traditional objectives of higher education include the following:

1. Increasing reliance on non tenure track faculty to develop, specify, and offer courses.
2. Programs and quasi degree programs (e.g. executive programs) where faculties have little or no control on content or quality.
3. Remote degree programs separated administratively from on-campus programs.
4. For-profit higher educational organizations offering degrees that utilize largely industry based adjuncts.
5. Increasing numbers of teaching-only faculty or adjuncts, and reduced numbers of tenure track faculty.
6. Less support for Ph.D. students as teaching assistants since incorporating self charges for tuition usually makes them more expensive than adjuncts when looked at as a very simplified cost benefit model that discounts future value and opportunity costs.
7. Expectations that Ph.D. students will all have some of their support from outside sponsorship, which provides no long term assurance to the student that they will be able to finish their degree.
8. Growth in administrators and administrative costs as faculty lose overall responsibility for parts of the educational and research process.
9. Pressure to use “course designers” to develop course material and freeze that material over long time periods to get adequate cost return, with related pressure to increase class size.

Many faculty have resisted the need to change their approaches to education and to incorporate some of the new technologies. This mistake is hurting them as the newer generation of learners are often familiar with technology and have come to expect its adoption in institutions of higher learning. Overcoming faculty resistance to the use of the technology is one of the areas that has to be a major policy issue if we agree that we need to retain many of the traditional values and faculty roles that made US higher education great.

The result of the above is that distance learning, combined with the above trends is destroying the desirable role of faculty as the decision maker on academic quality. We need to reverse this trend before online learning can live up to its potential [2].

IV. OPPORTUNITIES

Historically there was too much emphasis on separating the distance and the on-campus students with respect to teaching, administrating the program, and services [3]. This tradition has now become obsolete in that the technology of distance learning has extended to the on-campus student. The fundamental change that has brought this about is the introduction of blended courses where the face to face student is utilizing the same technologies that are utilized by the distance students. This provides the faculty member the option of treating any mix of distance and face to face students as one class, utilizing the same prepared material, and able to participate together as part of one class whether they are distance or face to face. We now have the opportunity to reintegrate the two forms of learning into one and the significant observation that the traditional faculty can be fully in charge of distance education as well as face to face education. It is only a matter of making all courses blended by introducing the required technology throughout the college or university. How to bring about this major shift in on-campus education is a current policy challenge.

Today blending is occurring in regular classes without any formal requirement to do so by regular faculty members. It is a technological substitution process [4] that has only recently started where regular face to face courses are being replaced by courses providing both face to face classes and online learning via reflective discussions and team oriented collaboration either in small teams or by the whole class [5]. This process, in time, will go to close to 100% substitution because it is far better than face to face classes alone. There are too many benefits to the students and the faculty for this not to happen. Today the current amount of substitution is probably under 5% (excluding email which is not a group discussion oriented medium). Usually when substitution processes reach 15%, most forecasters consider it the threshold for going to 85% or better.

V. POLICY ISSUES AND APPROACHES

We are now focusing on the need for institutions, in most cases, to completely change their approach to all face to face courses and change the institution into one ultimately offering all courses in a blended mode. This is a much larger shift for institutions of higher education than has occurred to date in the propagation of distance Asynchronous Learning Network (ALN) courses.

A. Faculty Issues

First and foremost faculty have to be committed to fundamental changes in educational process and the adoption of the technology to be able to put all the classes online and be able to hold online class discussions, provide students with private spaces for team work, and redesign courses to include high degrees of collaborative learning wherever appropriate. The institution must make the commitment to do this regardless of whether it initially reduces actual time in the classroom or not. In technical courses with a large pragmatic content dealing with tradeoffs in design and alternative methods of problem solving it is not at all clear that lectures can be significantly reduced. In this situation the benefit of blending is extending the class discussion to take place outside of the boundaries of the in class lecture. For those not in the classroom audio and slides are often sufficient for capturing the lectures and there is very nice software for capturing operational programs via video. Reducing illustrations of the mental model the instructor is trying to show the student in the process of problem analysis and solving maybe shortchanging the student.

This cannot be divorced from the understanding that there has to be a commitment to bringing about blended versions of the courses a department is responsible for. What this necessitates is an understanding that [6]:

- Collaborative learning requires restructuring the assignments for that course to involve team oriented projects and class wide collaborative discussions.
- Software to support the practicing of skills that must be learned is a useful adjunct that reduces the time that faculty have to spend on rote learning and which also frees them to emphasize problem solving and pragmatic knowledge in the course material.
- Faculty learn best by observing courses taught by more accomplished faculty. In other words, apprenticeship should be encouraged and opening virtual classrooms to other instructors as observers should become the norm.
- The department and the institution need to commit to the use of Promotion and Tenure (P&T) importance of teaching and advancing the introduction of blended courses.

An advantage of starting with blended courses is that faculty members can evolve the adaptation of the course over a number of semesters and have the chance to experiment and evaluate a series of small changes rather than having to convert a whole course in one semester. Too often today at research institutions, education is really a secondary consideration in the P&T process represented by some sort of threshold a faculty member must obtain but with no real weight placed upon outstanding performance in that category. In other words, it is not always a truly balanced approach between research and education.

Besides the P&T incentives for faculty to convert to blended courses, it would be wise to have some sort of reward system to encourage more rapid adoption. It is far more desirable to give the award after a specific accomplishment such as:

- The first offering of a course that has some fully online students in a class with face to face students.
- An innovative design and publication on a type of lesson involving online collaborative efforts in the class that would be useful for other faculty members to know about so they can take the same approach.

A typical reward might a budget that can be used for professional development such as travel to meetings or the purchase computing equipment. Rewards after accomplishment are a far safer process than prepaying faculty. There are always faculty that are not going to adapt to the new environment and it is far better not to try and push them but to concentrate resources on those more willing to innovate in this area.

B. Technology Issues

The technology to support online learning is still very crude when it comes to software to improve group oriented communications [6, 7]. Current vendors have invested most of their efforts in integration with existing administrative systems and capturing online course material in a way that is very easy to do and also creating a situation where it becomes costly to move the material to some other software platform. There has also been significant rises in prices by the more successful vendors. This is a very transient time with respect to the technology and we can expect very significant advances in communication systems and emerging software to support collaborative communications and composition such as represented by the Wiki and Blog movements.

It would be far more desirable to help faculty to learn how to develop their own Web pages for their course material and provide whatever tools would help them create their own course materials. At the

same time, the institution should invest in support and training for creating Web sites, utilizing some of the excellent freeware and open source applications software that have emerged [8]. There is very easy to use software for a person to record their own audio lectures to be used with slides or even operational programs. There is, furthermore, some excellent packages for allowing faculty and students to create cognitive maps they can exchange and compare to express their individual perceptions of the problem solving process in a given applications domain. One interesting assignment is to give student teams the requirement to develop some lectures on specific topics in the course, which is an excellent learning exercise. It would be far more economical for a college to have a single university wide gradebook for all students and not as part of great big “course management” system. There are such systems developed for public schools that should easily be upgradeable to the college environment. Building one is not that difficult today with some of the middleware database tools.

The institution can hire students as aids to help to train faculty in how to design, create and maintain a faculty website, which would be far less costly than absorbing the life cycle costs of getting stuck with increasingly obsolete technologies. Today's winner in the vendor competition is unlikely to be the winner five or more years hence if the recent past is any indication of the future. Having a faculty that is able to manipulate and utilize current and new tools for online learning is a major long term asset that eliminates having to have large staff resources to support an institution wide blended learning program.

Ultimately the online learning technology is a substitution process for physical classrooms and may be viewed as a savings to the university in that regard. The current budgeting systems are not adequate to track and identify the savings and tradeoff but some effort should be invested to identify these factors.

Universities are not good at knowing their real costs in terms of how they influence outcomes. The real cost of a fully online student is probably a lot less than an on campus student. In reality one should be able to justify charging less than the tuition for on campus students. This will become very clear when competition from foreign universities heats up in the U.S. and we see tuition charges from universities in the Far East and Eastern European countries that might be competitive with our community colleges but offering university level courses.

Clearly when a course becomes fully blended the typical three hour per week course can be reduced to one to two hours of face to face meeting depending on the subject matter and level of the course. How this varies by course should be the decision of the faculty member who is designated as responsible for the course and maintaining the content of what is taught, whether it be by other faculty, adjuncts, or Ph.D. students.

C. Methodological Issues

It is clear that the learning methodologies and approaches needed in the online environment are different than most faculty currently use. The need to shift rote learning and skill acquisition to supporting software and tutoring type functions, the emphasis on collaborative learning and the development of pragmatic material for learning problem solving, analysis, design and other pragmatic material are all requirements that will cause changes to many lower division and some upper division courses.

Ultimately the development of content knowledge bases that integrate content across different courses within a degree program area is an expected evolution. What this will allow is the ability of learning to become a team cohort process where a team made up of students who are at the same level of learning can proceed through curriculum material at their own speed. Furthermore individual learners will be able to

branch out to brush up on areas they are missing but feel they need to explore in relation to what they are currently learning. Faculty will gradually convert to dealing with teams as a unit rather than classes. The team as a unit will move through the course material encountering faculty when they are ready as a team to tackle that faculty member's part of the program. The antiquated concept that every single student will proceed at their own pace though course materials, only works for the genius level student. Instead students will seek to belong to a number of teams that they will maintain and work with throughout their college education and beyond. Students will need tools to be able to form teams and to change teams when necessary. Very little has been done to give students the electronic tools to form and maintain the virtual equivalent of the face to face networks most college claim as an important component of on campus living. Clearly this should be a key component of online learning.

Formulation of a knowledge base that gathers all the useful material for a degree program in one collaborative knowledge utility maintained by all the faculty in a given field is the ultimate outcome of what the technology offers and it will restructure higher education more dramatically than any administrative policies can. This will ultimately raise a whole host of policy issues related to the fact that most auditing of faculty performance is based upon classes, and the determination of the required minimum size of a class to be viable and the maximum size to not reduce quality. The current generation of administrators rather than faculty that may be the major impediment to progress in this area.

D. Societal Issues

Recently the ACM, the leading professional society for all computing, has compiled a draft document [9] that compares the degree programs in Information Systems, Computer Science, Software Engineering, Computer Engineering, and Information Technology. This document discusses the similarities and differences among these degree programs. Even academics are sometimes confused by the details of this issue. However, what is most significant is the appendix they are still drafting which will explain the differences, that is specifically being written for parents and prospective undergraduate students. Last year the College Board issued a report for parents and students describing the hundreds of undergraduate degree programs for students applying to any college. What we have is the first formal recognition of the need to provide guidelines for consumers of higher education that cuts across all academic institutions and represents the understandings that the consumers have to have to make intelligent decisions in the higher education marketplace. Now that the academic professional societies that set accreditation standards adopted by the accreditation bodies are getting into the issue of consumerism, we can expect that there will be a "truth in information" effort to see that a given accredited degree program is described the same way no matter what institution is advertising that degree program and associated accreditation.

Clearly there will be pressures for colleges and universities to publish the true performance measures of higher education and make that public information on their websites, including:

- The quality of who teaches what courses by a regularly updated vita.
- The total syllabus of what is taught in the required courses for a degree available to students interested in joining that degree program or thinking about taking the course.
- The distribution of graduates in recent years with respect to job types that they got (or did not get), salaries they were given and correlated to things like grade distributions.
- A comparison of the subjects in the required courses to what professional societies state students in that field should learn.

If higher education does not choose to do this itself then a lot of it will get done by large scale Blogs and Wikis on an informal basis and gradually some organization will emerge that will provide a true consumer report for higher education.

We are seeing the tip of the consumerism iceberg beginning to ply the oceans of higher education. One can predict that there will be standards on such things as what courses must be accepted at any institution for transfer credits when they are part of an accredited program, so that students will have a right to know ahead of time what will be transferable. It will be part of the accreditation conditions. There is little telling as yet what else might emerge from a consumerism movement but it might be such things as mandatory web vitas and teaching evaluation ratings of all instructors for a given course. Prospective students expect to see course syllabi before signing up for courses and information on the background of who is teaching the course. The fact that there are student websites that collect this information across different institutions is an indication that at some point the college and universities themselves will have to provide this same information.

Accreditation agencies traditionally have been a service to the institutions and the administration at higher education institutions. To maintain their recognition and significance in a changing environment for higher education they will have to become an equal service to the consumer of higher education. Consumerism will force all those concerned with the quality and utility of a higher education to focus on the quality and effectiveness of the instructors. This is why a first class faculty for an institution for its teaching function will be something they have to prove to the consumer, who will come to better understand its importance.

VI. CONCLUSION

It is not so much that with online education faculty roles have to change, as that faculty have to reassert those roles for online education and blended courses. It is not so much that they have learn how to innovate in education, as over the long term faculty have in fact been very innovative in introducing new approaches and technology, particularly in the development of laboratories and learning aids in many different academic fields. They are and have been the source for the educational material that keeps a field of knowledge current.

Faculty have to return to exercising their traditional role over all the degree programs whether it be distance or online. They have to make the investment in incorporating online learning technology and methodologies into their regular courses and removing the distinctions between distance and on campus students. The institutions have to support this by returning authority to the department and supporting the importance of education in the P&T process.

The institutions that effectively integrate distance and on campus students into one social community with the same administrative and services delivered to both will be those that not only save money but which will also attract and hold students through degree generation and alumni loyalty. We have not yet discussed the possibility of given those alumni life long learning advantages where ever they may be, such as filling empty seats for auditing additional classes at any time they desire and facilitating the on going networking process that they started at the institution.

VII. ABOUT THE AUTHOR

Murray Turoff is a distinguished Professor at the New Jersey Institute of Technology's Information Systems Department. He has been engaged in research and development of Emergency Response systems and related areas for the past three decades. In 1971, he developed the Emergency Management Information System and Reference Index (EMISARI) for the US Office of Emergency Preparedness OEP. He is co-author with Roxanne Hiltz of the award-winning book "The Network Nation" (MIT Press 1992)

and has published on a wide variety of Information Systems topics, among which group decision support systems, human-computer interaction, virtual organizations, and collaborative hypermedia.

VIII. REFERENCES

1. **Turoff, M., and S. R. Hiltz.** Education Goes Digital: The Evolution of Online Learning and the "Revolution," *Higher Education, Communications of the ACM*, October 2005.
2. **Turoff, M.** Alternative Futures for Distance Learning: The Force and the Darkside, *Online Journal of Distance Learning Administration* 1(1): Spring 1998. http://www.westga.edu/~distance/turoff11.html.
3. **Turoff, M.** An End to Student Segregation: No more separation between distance learning and regular courses, *On the Horizon* 8(1): 1–7, January/February 2000.
4. **Martino, J. P.** *Technological Forecasting for Decisionmaking.* New York: Elsevier, 1972.
5. **Hiltz, S. R. and R. Goldman (Eds.).** *Learning Together Online: Research on Asynchronous Learning Networks*. Mahwah NJ: Erlbaum, 2005.
6. **Harasim, L., S. R. Hiltz, L. Teles, and M. Turoff.** *Learning Networks: A field guide to teaching and learning online.* MIT Press, 1995.
7. **Turoff, M., and S. R. Hiltz.** Software Design and the Future of the Virtual Classroom. *Journal of Information Technology for Teacher Education* 4(2): 197–215, 1995.
8. **Kim, Y., J. Scher, and M. Turoff.** Towards a WebCenter for Pedagogical Freeware Collaborative Review and Retrieval, *Information Systems Education Journa*, 3(39): 2005. http://isedj.org/3/39/. ISSN: 1545-679X. (Also appears in The Proceedings of ISECON 2004: §4124. ISSN: 1542-7382.)
9. **ACM Computing Curricula**, 2005. http://www.acm.org/education/curric_vols/CC2005-March06Final.pdf .