

## US Education – Major Problems Ahead

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### Introduction

The US Higher Education system is in a severe financial crisis as the state and federal governments have cut back on funding to universities. The tax cuts at the federal level has led to major decreases in federal spending and has forced the states to increase spending in other areas such as health care and highways, where the federal government shares a large part of the costs and the states get more revenues for each state dollar spent. The programs at the K-12 level permit students to transfer out of schools failing to meet the minimum standards, but this permits only the “good” students to transfer out as the private schools won’t take the poorer students. This results in making it more difficult for the poor schools to improve as the better students leave for better schools. States therefore must focus on improving the poor schools in order to keep the federal funding and the state higher education budgets suffer as higher education federal funds are not tied to any federal standards for school performance. In addition many public schools in the K-12 level are unionized with contracts for a 3 to 5 year period and cuts are difficult to implement in a short time frame. The federal budget prepared by the president is a deficit budget without considering any of the tentative war expenses and yet he is still proposing additional tax cuts that will tend to cause more financial problems for higher education.

The threat of another oil crisis with the political instability in Venezuela, a threat of war with Iraq, a threat of war with North Korea, the threat of terrorist activities, and the lack of a clear victory in Afghanistan, have led to reduced consumer confidence in the economy. The economy, which has been primarily supported only by the consumer sector and not by the information economy, the service economy, or the manufacturing sector, appears to be on the brink of going into a depression. The effect of the tax cuts for the wealthy and the lower interest rates have not restored the economic engine as the investors are not investing in new equipment and facilities. The unemployment rates have reached the highest levels in over ten years and appear to be increasing. The holiday spending increase in 2002 was reported to be the lowest in the last 10 years and some have indicated the lowest in the last 30 years. In June of 2002 it was stated that for colleges this current recession was not just another recession, but this one will be more severe<sup>(1)</sup>. Nearly a year later, it appears this prediction was correct.

The financial crisis is very severe as states have reduced the percent of the state revenues to higher education<sup>(2)</sup> from 9.8% in 1980 to 6.9% in 2000, that is a 30 percent reduction and more reductions are coming. Politicians are very reluctant to raise taxes and voters are not likely to approve bond issues and thus severe cuts in higher education faculty and staff are likely to occur in the near future. The first stage will be the lack of replacement of faculty who leave for better opportunities or retire. The universities will increase the workloads and attempt to obtain more funded research, but with fewer faculty and more courses to cover the research loads will decrease. The untenured faculty will have a difficult time becoming tenured as the expectations for research funding and teaching performance have increased as universities seek only the absolute superior new faculty. The reduced teaching loads for new faculty may be for shorter time periods as teaching demands are increasing with smaller departments. Small private schools with little or no endowment funds have already begun to reduce faculty and staff.

In addition to the severe financial crisis, there are also many educational problems. One major concern is the “graying” of the faculty resulting from delayed retirements. Increased retention may increase tuition revenues, but as retention tends to increase so does grade inflation. Another issue is the focus by students and their parents to be able to “get a job” rather than get an education. Students are spend considerably less time studying as they have part-time jobs or are athletes and spend considerable time in training or working. The emphasis on successful athletic programs to generate revenues with increased schedules does increase the marketing of the university, but it results in more distractions for the students and faculty and results on more pressure on the athletes for improved performance. The instructional problems with students under the disabilities act has resulted in threats to faculty and staff by administrators. Cost-cutting efforts to reduce faculty has resulted in an emphasis to decrease the credits(and therefore the costs) in academic programs.

### Funding Alternatives

With such severe financial cuts by the state and federal governments, university administrators must consider funding alternatives to run the university. Some of the alternatives<sup>(3)</sup> previously mentioned are increased tuition, more royalty and patent arrangements, naming fees, bookstore contracts, merchandise sales, and athletic department revenues. In addition, there is an increased focus on the marketing of the educational institution to increase enrollments.

Fortunately in West Virginia, the PROMISE(Providing Real Opportunities for Maximizing In-state Student Excellence) Scholarship Program<sup>(4)</sup> pays state tuition for high school graduates with a GPA of 3.0 or above and an ACT score of 21 or greater or a SAT score of 1000 or greater. Students must maintain a 3.0 average or higher and complete 30 credits per year to maintain the scholarship. West Virginia University(WVU) had 1,278 freshmen as PROMISE scholars out of nearly 3,500 for the state of West Virginia. Some state schools had more than 50 percent of their freshman class as PROMISE scholars. Without this program, enrollments at the state colleges in West Virginia most likely would have declined.

The first funding alternative is to increase the tuition and tuitions have increased and will continue to increase at a greater rate than inflation. Some states, however, have limits to the

increase and in West Virginia it is now 9.5 percent per year. This would seem to be a high level, but when the state is considering a 3 percent retroactive budget cut and a tentative budget cut of 12 to 14 percent in the base budget for the next fiscal year, the financial picture is grim. However, the Chancellor of WV Higher Education consoles the faculty by stating that many states are in a worse economic situation. During the last 7 years, tuition has increased by nearly 5.0 percent per year for residents whereas salaries for all faculty has increased only 3.8 percent at WVU. Over the last 19 years the residential tuition increased an average of 8.1 percent as tuitions increased 30 percent in the early 1980's. If the economy goes into depression, then enrollments will decrease and tuition increases will be difficult to implement.

A major emphasis has been to improve the athletic team performance to enhance the image of the university. Television advertisements during sports events are one example of good marketing techniques to enhance the university image. Recently West Virginia University had its head football coach retire after more than 20 years of service. A new football coach, with no head coaching experience at a major university, was hired on a five-year contract at an annual salary exceeding that of the previous coach. After the worst record[3-8] in over 20 years in his first year, his contract was extended an additional year. In the second year, the record was improved[9-3] and a bowl bid obtained. In spite of the severe financial crisis in higher education and in the state, his salary was increased more than 50 percent and contract extended to 7 years. The administration stated that this was due to market conditions and the monies would come from the athletic department, not from state funding. This situation is not unique to WVU as the coach's salary package is still under 1 million dollars. This validates the perception that successful athletic programs are necessary to attract students. Recently the article in *The Chronicle of Higher Education*<sup>(5)</sup> described the athletic program at Ohio State and referred to it as a "Sports Factory" with a budget of 79 million dollars for the sports programs. The head football coach often has an individual salary package greater than the salary budgets for some of the smaller academic departments.

The increased marketing from athletics does increase student enrollments with successful programs and the athletic scholarships do increase the number of funded students. Athletic scholarships typically require a minimum of 20 hours of practice per week and they are often expected to do additional conditioning activities on their own time. Due to the increased pressure on coaches to have a winning program, increased pressure has been put on the student athletes to focus on the athletics and their classroom performance is impaired. Title IX concerning gender equity in college sports has greatly increased the number of female athletes and recently 5 to 10 percent of the total students in my engineering classes have been athletes. The minor sports athletes have generally performed better as scholars than the major sports athletes. Recently two of the student athletes I taught indicated that the practice sessions are too demanding and two others had to drop the sports because of injuries. It has been reported<sup>(6)</sup> that athletes have a better graduation rate than the all student rate at WVU.

A relatively new scheme by administrators is the naming campaigns where wealthy alumni or benefactors can make an appropriate donation to have a college, department, building, classroom, laboratory, or facility named after them. In some instances, universities have changed their name in appreciation after donors have made substantial donations. Thus the naming of buildings after dedicated faculty or administrators most likely will occur only if

backed financially. Of course if a politician obtains federal funding for the building, it may be named after him/her. Our new library recently had a campaign for naming rooms, computers, tables, and other items for a specified donation. This tendency to focus on donations for naming leads to the conclusion that money, not performance or service, is the key ingredient at a university. This attitude concerning the importance of money has been noticed by many students who feel that when the tuition is paid, the course is passed.

The increased marketing of the university is indicated by the effort going into the development of logos and slogans. The second page of the WVU telephone directory<sup>(7)</sup>, that is the first page after the table of contents, is about the logos, symbols, and trademarks and how to use them in your correspondence and elsewhere. The demand for uniformity throughout the university makes one wonder if 1984 has finally arrived. Some of the recent slogans have been 1) Success-Expect It© and 2) Where Greatness is Learned©. Marketing at our university has also been directed to the parents of the students by indicating how safe the campus is, the improved dormitory facilities with residence faculty living in the dormitories, the elimination of the “back-to-school” drinking party, the new “up-all-night” program which provides activities for students from Thursday Night to Sunday Morning at the student union, and etc. Since many parents pay the bills, they have a strong influence over which university their children will attend. Another key marketing item for engineering programs is all of our students(or X percent) had jobs by graduation last year.

The elimination of tenure was presented at the 1992 ASEE meeting as one of the keynote speakers from industry indicated that the financial problems of universities was caused by faculty who were not productive or questioned authority. University administrators tend to worship the industry leaders as they can provide substantial financial support through grants and contracts. Hopefully they will also remember that the problems of Enron, World-Com and Arthur Andersen were caused by not having independent minds that questioned authority or by not listening to subordinates who provided warnings of future problems. At some universities faculty have actual input in many administrative decisions, but at most institutions most administrators don't seek faculty input.

## Educational Concerns

The distressed economic environment has forced many faculty and staff employees not to retire causing a “graying” of the faculty. This graying is also occurring in many industries where people are working into their 70's and 80's to maintain the health care benefits and financial stability needed as the health care and retirement safety nets of the US have failed and the concerned, compassionate leadership in Washington does not have a solution. Since good jobs are scarce, faculty are postponing retirement, let alone consider early retirement. The average faculty age in my department is over 50 years and is increasing as new faculty hires are unlikely in the near future. As an interesting potential parallel in the medical profession, there is a severe shortage of nurses, but companies are going overseas to hire skilled nurses from less developed countries rather than train our people and pay market wages. In the information technology sector, many internationals were hired to meet the demands of the late 1990's, but now we have an excess. The ethics of taking the highly trained persons from developing countries must be considered as we live in a global world. If we do not train people for the positions or pay

adequate wages, the unemployment rates will increase and without adequate safety nets, the crime rates will also increase and more prisons will be needed. It costs much more to house a convict in prison than to send a student to college, but our society prefers to spend its tax dollars on housing prisoners.

The disabilities act has led to the creation of disability services sections, which indicates that students with learning disabilities must have special conditions provided as they are mainstreamed into the higher educational system. Most of the time the conditions are for more time during exams and this can be arranged but a few students have so many conditions that it does prevent using all the teaching techniques. It is no longer possible to give short pop quizzes of problems in class for it is impossible practically to give one student twice as much time without the other students complaining. Engineers must be prepared to make quick decisions in emergency situations and the pop quiz was one method of evaluating rapid decisions. If a student with disabilities complains to the disability services, the university special services will threaten you as they fear a loss of federal funds. One will get a special appointment with the dean faster with a special student disabilities problem than by publishing a paper or being awarded a research project. The recent requests have been for more test time, preferred seating, note taking assistants or give your notes to the student, and etc. Even though this is a serious problem, the university has not offered any training on how to handle the special needs or held brainstorming sessions for possible solutions, but gives orders as to what you must do. This has created poor attitudes towards the administration and reinforces concerns about the typical administrative approach, which is not to solve the problem but to fix the problem.

Universities want to increase tuition revenues, so more efforts are being made on the retention of students. One policy, which now is no longer in effect, was to send a faculty member a notice indicating that something was wrong with their teaching skills if more than 20 percent of their students received a D, F, or W(withdraw) in a course. This alone implied that at least 80 percent of the students should get an A, B or C grade. It has been reported in some universities, that over 90 percent of the grades awarded were A and B grades. The average GPA has increased from less than 2.5 in the early sixties to over 3.0 today. The grading system at WVU and many other universities states that the grade of A is for “students of superior ability” and attainment and that the grade of B is for “students well above average.” Thus, how can the mean student be well above average and yet no university administrator has indicated that faculty should toughen up on grading.

Students recognize the grading problem, and don't study much as poor grades, such as D's and F's, rarely occur. The average student studying time traditionally was 2 hours per class credit hour per week, and thus a student with 15 credits should be studying 30 hours per week. The Chronicle of Higher Education reported<sup>(8)</sup> that less than 25 percent of students spent 20 or more hours studying and that more than 35 percent of the students spent less than 10 hours per week studying. For student athletes, who have at least 20 hours per week in practice, events, and other activities, it is nearly impossible to study 30 hours per week. It is amazing that our students are doing better with considerably less studying; or is it that the educational programs are not as rigorous as before. Apparently the distractions of TV, video games, more athletic events(12 football games versus 9 in the 1960's and 30+ basketball game seasons), better recreational facilities, and etc. cut deeply into study time. More students have part time or full

time jobs and attempt to carry full time loads and thus have little time for class let alone studying. Although the use of technology tools has provided students the capability of solving more complex equations, in many instances does not increased their understanding of the engineering process as rarely do they check their answers to evaluate if they are correct or at least reasonable.

During the last 15 years there has been an emphasis on reducing the credits for a degree. Most programs have decreased by 2 or 3 courses, that is 6 to 10 credits. As a comparison of a student forty years ago who had 19 credits of chemistry and physics and 12 credits of engineering mechanics, the student today has only 12 credits of chemistry and physics and 3-6 credits of engineering mechanics. With students studying less, getting better grades, and taking fewer technical credits, are they getting a better engineering education? One reviewer commented that some people in academia have “wised-up” to the concept of “lean design” to eliminate irrelevant courses and are using “industry required courses to teach and educate their students.”

The emphasis of students and their parents recently has been on “getting a job” rather than “getting an education”, which puts the emphasis on getting the degree, not necessarily learning the material. More courses have been developed on resume writing and job interviewing to help students get jobs. Courses that are not “job oriented”, such as the basic science and material courses, are cut back as being unnecessary, but the technological society that exists requires that engineers have an understanding of how and why devices work. This lack of the general basic science education makes the students less flexible in the work environment and less prepared to do graduate work.

## Summary

The higher educational system in the US is in a severe financial crisis as a result of federal and state funding reductions and poor economic conditions and this is having a detrimental impact upon academic programs. The faculty is graying as a result of being unable to afford retirement. Although there are more scholar athletes, the increased demand on the student’s time for practice and conditioning reduces their study time. More distractions from studying occur for regular students as there are more athletic events, better recreational facilities, and more part-time employment opportunities. Grade inflation has occurred while students are doing less studying and program requirements have been reduced. Faculty have not been properly trained to handle the issues that can occur with the mainstreaming of students with learning disabilities. The financial crisis and related educational issues appear to causing major problems in education in the US.

## Bibliographic Information

1. David W. Breneman, “For Colleges, This Is Not Just Another Recession”, The Chronicle of Higher Education, June 14, 2002.
2. Jeffrey Selingo, “The Disappearing State in Public Higher Education”, The Chronicle of Higher Education, February 28, 2003, A22-A24.

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3. Robert C. Creese, “Major Differences in Educational Systems – Is It Time for the US to Change?”, Proceedings of the 2002 ASEE Annual Conference & Exposition
4. <http://www.promisescholarships.org/>
5. Welch Suggs, “How Gears Turn at a Sports Factory”, The Chronicle of Higher Education, November 29, 2002, A32-A37.
6. Danny Forinash, “Scoring On and Off the Field”, The State Journal, Feb. 7, 2003, p. 3
7. University Directory-West Virginia University 2002-2003, WVU Publication Services, p2.
8. Jeffery R. Young, “Homework? What Homework?”, The Chronicle of Higher Education, December 6, 2002, A35-A37ion

#### Bibliographic Information

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