LEARNING FITNESS FOR THE 21st CENTURY

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If I assess the situation in Arkansas correctly, there is an agenda for the improvement of higher education, stimulated in Arkansas as elsewhere, by the recognition that in education lies the foundation for the economic and social progress of the state. Any state that wants to prosper in the information age must look first to the abilities of its citizens and its workforce to adapt to rapid and incessant change. John Naisbitt (1982) titled his book on the future, Megatrends to suggest that we live at the confluence of more major changes than any generation in history. One thing we can predict with certainty is that the world will continue to change and that education is the best way we know of to prepare people to adapt to change.

Attention to excellence in education skyrocketed to public attention a year or so ago with with the release of the report entitled "A Nation At Risk." In colorful and endlessly quotable language, it informed the public that, "Our nation is

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at risk....If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war" (p.5).

Nationwide, that report kicked off more than three hundred state task forces and blue-ribbon committees to make recommendations for the improvement of education in the fifty states. Higher education has since come forth with its own reports on reform.

Report writing has become both an art and a passion in the 1980s, and there is the hope--in the academy itself, I think--that all of this emotional appeal for action will not go for naught. Personally, I don't regret the attention education is getting these days. I think it has the potential for leading to vastly improved educational experiences for students. And that, we should remember, is the point of all of the hullabaloo--improved learning experiences for students.

Strangely enough, I don't think that "improved learning experiences for students" has been the focus of much of the attention in higher education. In some cases, we have the shoes on the wrong feet. Where we should be clamoring for better colleges for students, we seem to be demanding better students for colleges. State reforms that raise admission standards for college entrance, for example, may at their best, be calling for improved learning experiences for high school students, but they do not address--indeed they avoid-- the issue of improved education for college students. That is where I want to begin this ~~evening~~.

First, we will need to have some notion of what kind of education today's college students need to survive and prosper and make their contribution to the society of the 21st Century.

The Year 2000 is only fifteen years away. Today's entering college students will be in their mid-thirties by the turn of the Century, getting ready to assume positions of leadership. What kind of people do we want them to be? What should they know and be able to do? What values should they have? They will be determining the direction for society, and their education is important to us, to them, to the nation, and to the world.

Futurists have not been notably successful in predicting what the world will look like even fifteen years in advance. The steeper the slope of change, the more difficult planning becomes. I don't know, for example, whether Alvin Toffler's "electronic cottage" will be a reality of the 21st Century. If so, education will be so radically changed, that I doubt we can see the total impact clearly enough to make reasonable plans. Our task is not to prepare students for life in the electronic cottage, but to prepare them to adapt to a world of change. What students know when they leave college will not be nearly as important as what they are capable of learning.

The explosion of knowledge is so great right now that scientific and technical information doubles between a student's freshman and senior year in college. Fortunately, students don't remember much of the content that we work so hard to teach them. If they did, their information about yesterday's world would make them candidates for early retirement, in favor of new college graduates who had more accurate and up-to-date information.

There is more [illegible] a grain of truth I remember [illegible] med school dean [illegible] grad class. "Future physicians," he said, "I must tell you that

It has been said that education is what remains after content has been forgotten. One way to approach planning for the future of higher education is to ask, what do we hope remains after content has been forgotten?

If we phrase the question that way, it casts a new light on what we mean when we speak of excellence in education. Does educational excellence mean high scores on achievement tests that measure mastery of subject matter content? Perhaps, in part. Given the assumption that students need always to stand on the shoulders of generations that preceeded them, we want students to know what we know so that they don't perpetually reinvent the wheel. But education is far more than the transmission of knowledge. Indeed, were we to content ourselves with the transmission of knowledge, we would be moving backward, with each new generation learning only part of what we know.

The task of education is to enable students to move beyond what we know about the universe. Our worth as teachers is measured, only in part, by how well we keep up with changes in our disciplines. More important, is how our students think about learning. If they graduate from college with a sigh of relief, saying "There that's done," then we have failed to educate them. Mortimer Adler (1982, p.11) puts it this way, "Schooling, basic or advanced, that does not prepare the individual for further learning has failed, no matter what else it succeeds in doing."

Increasingly employers are asking for people who can invent new products or procedures, who can interpret trends and analyze problems. Peters and Waterman, the authors of <u>In Search of Excellence</u> call it "productivity through people." In the

Industrial Revolution, productivity was achieved through putting money into more efficient machinery and plant expansion. The idea was to produce more at less cost. In the post-industrial society, productivity comes from knowledge and people who know how to generate it and use it. A good idea can be worth millions today--so much that Rosabeth Kanter (1983, p.18) says "Idea power is the most important economic stimulus of all."

No wonder that employers, states, and the nation are so interested in an educational system that will result in people who have "idea power." Ideas are far more important to our world than information which has become both plentiful and cheap. "Running out of [information] is not a problem," says John Naisbitt, "but drowning in it is" (1982, p.24).

The change from valuing information to valuing ideas seems to me to have been extraordinarily rapid. When I was in graduate school, the library search for relevant information constituted the challenge of term papers. The challenge is quite different for my graduate students today. They are inundated with relevant information. Both the quantity of publication and the ease of retrieval have put more background at their disposal than they know how to use. Their challenge is not to locate relevant information but to put it together to create new perspectives and new ideas. The well-stuffed mind has become devalued as a measure of education; it has simply been outclassed by the computer.

The abilities that become valuable in our kind of world are the skills of synthesis, analysis, and application. For those of you familiar with Ben Bloom's taxonomy of cognitive skills,

comprehension and analysis are more advanced cognitive skills than recognition and recall. The age of computers and telecommunications calls for higher levels of congitive development, and there is some evidence that one of the elements of quality in highly selective colleges is that they seem to be demanding that students learn how to think.

A fascinating new study reported in the Fall issue of the Journal of Higher Education (Braxton and Nordvall, 1985), looks at the cognitive demands made upon students by final examinations. The researchers found that final exams at highly selective colleges contained more questions requiring higher order cognitive skills of analysis and synthesis that those at less selective colleges, where questions calling for simple recall and recognition were more common. The conclusion of the research is that, "More selective liberal arts colleges are more likely to actively engage students more fully in the process of how to think than do their less selective counterparts (p. 550, emphasis added).

Today's demand for higher levels of cognitive development has an analogy in current perceptions of physical fitness. Before machines replaced human muscle power, there was little need for physical fitness programs. People got more than enough exercise on the job. But the purpose of the exercise was to get the work done, not to develop the body or to keep it physically fit. When machinery replaced muscles on the job, people moved to higher levels of physical development. They became free to be more like a human and less like a machine. Instead of the over-developed forearms, for example, of yesterday's steel

workers, today's more sedentary workers are likely to exhibit more balanced and higher levels of physical development.

Perhaps the age of the computer will have a similar impact on cognitive development. Instead of performing the low level congitive skills of memory and recall, which are handled better by a computer today, human beings are now free to concentrate on higher level development that includes analysis, synthesis, and application.

Following this line of reasoning, I asked myself how educators might go about developing a program of "learning fitness" comparable to the physical fitness movement that has so captured public fancy as the Industrial Revolution plays itself out.

Unfortunately, we cannot <u>give</u> students a good education any more than we can <u>give</u> people physical fitness. Both must be developed over a period of time by the individual, but there are some interesting analogies between physical fitness and learning fitness:

1. The dissemination of research on physical fitness has been helpful, and the general public proved fairly easy to reach and to teach. Smoking has declined, jogging has increased, knowledge about the cardiovascular system has spread, and many people know the difference between exercising to develop muscle strength and exercising to develop heart and lung capacity. If learning fitness came to be perceived as important as physical fitness, would not people be eager for more knowledge about how to attain it?

2. Fitness is developmental. It is clearly understood that

no one--not Nautilus, not Adidas, not Jane Fonda, and not the national and local park and recreation system--can give people physical fitness. People understand that it takes time and requires their own personal investment. Experts can diagnose, prescribe, and offer feedback, but in the final analysis, fitness is something people must attain for themselves. The best we can do is provide the environment, the equipment, and the support system to enable people to develop themselves.

3. We cannot modify the rules of physical fitness to take account of the life circumstances of the aspirant. We can't, for example, suggest that adults invest <u>less time</u> in the process because they have job and family responsibilities--although we can certainly make jogging tracks available, put exercise rooms and swimming pools in hotels, make the hours of Nautilus consistent with adult schedules, deliver inspiration, information, and yes, even images of fellow fitness buffs dancing to the beat of aerobic music on television.

4. We can't make everyone equal in physical fitness. Everyone can improve, and everyone can do something--even if from a wheelchair or in homes for the elderly. But the challenge must be consistent with the ability and condition of the learner. Today's concept of physical fitness is basically non-competitive. Sure, there are a few super stars who win the Boston Marathon, but for most people the companionship of running together and the feeling that they are doing something good for themselves is enough.

5. Fitness must have some payoff; it has to work. People need the reinforcing feedback of feeling better, looking better,

and in general taking pride in their accomplishment. One of the interesting things about physical fitness is that people are willing to wait for long-term results. Joggers do have to see improvement, but it does not need to be today or tomorrow. Indeed, the current advice seems to be that intermittent exercise is better than constant pushing and that muscles need time to recover and time to grow and develop.

6. Fitness is never finished. We cannot participate in a rigorous well-balanced program as young people and hope to remain fit for the rest of our lives. We will all slip out of shape from time to time, but we should learn what being in shape feels like and we should know how to get in shape.

7. Fitness is for amateurs. There is no mystique about it, and experts do not intimidate. Although body builders and marathon athletes may know everything there is to know and do everything there is to do in developing their own expertise, they do not deter the rest of us from knowing what works for us.

8. Fitness does not require large expenditures of money. Wearing the right shoes will surely help, but stylish jogging outfits and fancy equipment are incidental, and lack of funds is rarely heard as an excuse for doing nothing.

9. Fitness is active. No one ever became fit by watching someone else or listening to descriptions of fitness. People who are models of fitness can inspire; experts can demonstrate exercises and skills; and reading assignments can inform and develop appreciations; but in the final analysis, the only way to develop fitness is to engage actively in the activities that are known or thought to lead to that goal.

If the goal of a good college is to prepare students for a lifetime of active learning, what do we know from research and experience about the processes of teaching and learning and how to improve them?

One of the better applications of research knowledge on teaching and learning in higher education is found in the recent NIE Report on educational reform entitled, Involvement in Learning (Study Group on the Conditions of Excellence in American Higher Education, 1984). The committee of educational researchers who wrote the report conclude that "The quality of undergraduate education could be significantly improved if American colleges and universities would apply existing knowledge about three critical conditions of excellence--(1) student involvement, (2) high expectations, and (3) assessment and feedback"(p.17).

They define student involvement as the amount of "time, energy and effort students devote to the learning process" (p.17). It doesn't take research to convince any teacher that involvement in learning is critical; our own learning experiences and those of our students offer ample testimony. But the two fundamental principles derived from research by the authors of the NIE Report bear highlighting:

1. The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program, and,

2. The effectiveness of any educational policy or practice is directly related to the capacity of the policy or practice to improve student involvement in learning (Study Group, 1984,

p.19).

Those two principles reflect some twenty years of research on college students, much of it distilled in Sandy Astin's (1985) new book, Achieving Educational Excellence. His contention, adopted by the NIE panel, is that students who are involved in almost anything on the campus, are more likely to learn and less likely to drop out than students who remain on the periphery. Students who live on campus are significantly more likely to graduate than commuters. This positive effect occurs in all types of institutions and among all types of students regardless of race, gender, ability, or family background. Holding a part-time job on campus, participating in athletics, ROTC, student government, fraternities and sororities, honors programs and almost anything else that brings the student into closer contact with faculty and fellow students seems to result in a closer identification with the college with the attendant positive effects on student retention.

The research by this time is persuasive, and it helps that we knew it all along from our own observations and experiences. Engaging the minds and energies of students in the learning process is the goal of a good education, and it begins in the classroom.

Getting students involved in learning is both an art and a craft (see Gullette, 1982), and the failure of college teachers to develop either is getting shrill criticism today from the commissions on excellence in higher education.

The report issued by the American Association of Colleges declared flatly that, "Central to the trouble and to the solution

are the professors, for the development that overwhelmed the old curriculum and changed the entire nature of higher education was the transformation of the professors from teachers concerned with the characters and minds of their students to professionals, scholars with Ph.D. degrees with an allegiance to academic disciplines stronger than their commitment to teaching or to the life of the institutions where they are employed" (1984, p.14).

Seventeen of the twenty-seven recommendations made by the NIE Panel on educational reform concerned faculty, and graduate training and institutional practices regarding promotion and tenure are widely regarded as the culprits that distract attention from teaching and place it dubiously and even non-productively on research. "The language of the academy is revealing," say the authors of the AAC Report, "professors speak of teaching loads and research opportunities never the reverse" (1984, p.15).

While teaching "methods" has never been a popular concept with college professors, it is clear that some teaching methods are more effective than others in involving students in learning. Lecturing to students has long been decried, and yet it is the overwhelming method of choice for college teachers. To be sure, there are lecturers who can get and maintain high involvement from learners, and when that happens it is a rich and rewarding experience for both lecturer and students. But it doesn't often happen, and there are plenty of lecturers who are not even much involved themselves.

It is estimated that teachers in the average classroom spend about 80% of their time lecturing to students, who are attending

to what is being said only about half of the time. Researchers at the University of Tennessee (Pollio, 1984) studied student activities in lecture classes in two ways--first, by asking students to record what they were thinking about when a bell sounded several times during the lecture, and second by coding what students seemed to be doing. The researchers classified 60% of the self-reports as on-target, while 49% of the observed behavior was coded as attending to the lecture.

The most common behavior was notetaking, but some of this was what the researchers called "mirrored notetaking," easily recognized by most teachers as the verbatim notetaker who asks: "Could you please repeat that?" The wag who defined a college classroom as "a place where information passes from the notes of the professor into the notebooks of the students without going through the minds of either" was pointing to the lack of involvement that characterizes many college classrooms.

Involving students in their own education is no easy task. Much as I admire Robert Hutchins, I think he was demonstrably wrong when he said that, "All there is to teaching can be learned through a good education and being a teacher" (1936)

Joseph Axelrod wrote a book in 1976 that bears re-reading. It is entitled <u>The University Teacher as Artist</u>, and is based on the observation of hundreds of humanities teachers at work in their classrooms and on interviews with more than sixty faculty members regarding their views on teaching. Let me describe briefly the four prototypes of evocative teachers that Axelrod identified through his research. Professor A emphasizes the mastery of subject matter. His task, as he sees it, is to cover

the materials of his discipline in a systematic way in order to help his students master those materials. He prefers "an emotion-free atmosphere" in his classroom, and he maintains a cool and rational approach. He conceives of knowledge as a product rather than a process--i.e. knowledge is something that people have, rather than an on-going activity of the mind. Student growth, to Professor A, is demonstrated by movement from ignorance to knowledge (p.18,19).

Professor B, like Professor A, is instructor-centered in that he emphasizes the primary role of the teacher as authority and model. But Professor B believes that his major task is to provide students with a model of the liberally educated man. It is not really subject matter that is at the center of class activity, but rather the demonstration of a well-educated person at work (p.25). Professor B is one of the best known and most colorful figures on campus. He makes no effort to cover the subject matter systematically; his task is to demonstrate how to handle his discipline. He conceives of knowledge as process rather than product and classtime is spent demonstrating "not a set of static products, but an ever-changing, ever-alive activity" (p.26).

The other two prototypes identified by Axelrod are student-centered, not so much because they emphasize the discussion method of teaching, as because they see the student as the central focus of the classroom activity. Professor C places major emphasis on the development of the mind, whereas Professor D is convinced that intellectual development cannot be split from other aspects of student development. While Professor C

concentrates on developing the higher level cognitive skills, such as analysis and the use of reason, language, and problem-solving, Professor D emphasizes wholeness and believes that faulty members should work with others in the college environment to effect the development of the whole person.

Mottos can be devised for each of the research prototypes. For Professor A, emphasizing principles and facts, the motto is "I teach what I know." For Professor B, modeling the liberally educated person, the motto is "I teach what I am." The motto for the student-as-mind prototype, is "I develop minds," and for the professor interested in intellectual, emotional, aesthetic, and other aspects of the whole person, the motto is "I develop people."

I could ask you which professor you identify with. I could ask which constitutes excellence in the classroom, and I suspect that all four prototypes would appear in your answers. I won't tell you where Axelrod comes out in his evaluation of these types. His study is worth your time and I commend it to you.

Where I come out, at least in the context of my present task of thinking about what constitutes excellence in higher education, is that all four of these teachers are <u>involved</u> in teaching. They are all considered good teachers. To some extent, they all involve students in learning. One could easily make the case that we are fortunate to have such diversity in teaching styles on our campuses. But their presence certainly complicates definitions of excellence, and it causes all kinds of problems for advocates of measuring student outcomes. These four prototype teachers have four rather different outcomes in mind

for their students. Mastery of subject matter is the easiest to measure and perhaps the narrowest of the teaching goals. It is, I believe, what most people think of when they talk about educational excellence, and many legislators and quite a few educators would be satisfied if students knew their subject matter. The massive movement toward statewide achievement testing is testimony to the prevalence of what I perceive to be an incomplete and ultimately unsatisfactory definition of excellence, given the type of world I expect to be living in, with its rapid obsolescence of information and its high demand for creative application and lifelong learning. Some contend that measuring student mastery of subject matter is at least a step in the right direction, but as Alfred North Whitehead remarked a half a century ago, "A merely well-informed man is the most useless bore on God's earth" (1929).

For those who wish to travel this path, however, it is important to note that <u>if</u> mastery of subject matter is the goal, then Benjamin Bloom (1984) and his colleagues at the University of Chicago have presented persuasive evidence that we do know how to improve content mastery. Bloom compared three methods of teaching--tutoring of two or three students at a time, mastery learning with thirty students per teacher, and conventional classroom teaching with a ratio of thirty students to one teacher. He found that the average tutored student out-performed 98% of the students in the conventional classroom and that the average mastery learning student out-performed 84% of the students in the control classes.

The idea of tutorials is liked by most academics, but is

considered far too expensive for massive implementation. But mastery learning is both efficient and effective when the goal is to master subject matter content (See Cross, 1976), and the ideas behind both tutoring and mastery learning, are those articulated in the NIE report. They are to increase student involvement, to expect and require high levels of performance, and to provide assessment and corrective feedback.

We should recognize, however, that the computer is really quite good at getting students involved; it lends itself well to teaching facts and information; it provides immediate feedback; and it can be used to hold students to previously established standards. There are some subjects where mastery of subject matter content is clearly the goal. I used to be a math teacher, and I know that it is impossible to build toward anything that might be considered the enlightened or self-propelled learner without first teaching the basic skills. The problem comes when we are willing to settle for the basic skills at the collegiate level.

In one sense the united outcry against the quality of the educational system has been helpful in establishing the importance of the issue. But the problems of the elementary and secondary schools are not, by and large, the problems of the colleges. Elementary and high school teachers are accused of knowing too much about pedagogy and not enough about their subject matter. Proposed solutions, therefore, suggest more academic rigor, higher standards, and greater efforts to attract "better" students into teaching.

For higher education, in contrast, teachers are accused of

having too much knowledge about their subject matter and not enough knowledge about how to teach it. The solution is not the same, and reform is salutory only when it tackles the right problem. The criticism hurled at higher education is that faculty and administrators have not been personally involved with student learning. Administrators have been preoccupied with survival, politics, and management, while faculty have been involved in research, publications, and the search for recognition from peers off-campus.

Presidents have been pulled out of involvement in the academic programs of colleges by the realities of the external world, but they have also been pushed out by the carving up of the campus turf into academic, business, and student development fiefdoms. Clark Kerr (1984, p.8) says emphatically that "The president should be the chief academic officer in fact, and the president has a special obligation to innovate and initiate academic policy from the special view of the long-term and overall welfare of the campus...." We need to return presidents to involvement in what and how students learn.

As for the faculty and the graduate schools that train them, the study commissions have biting criticism. "Teaching should come before research," says the AAC panel on educational reform, "This message must be forcefully delivered by academic leaders responsible for undergraduate education to the universities that have awarded the Ph.D. degree to generation after generation of potential professors, professionally unprepared to teach" (Chronicle of Higher Education, 1985,p.16). "Unless our graduate schools re-examine this misplaced emphasis," says William Bennett

in his report for the National Endowment for the Humanities, "much of our teaching will remain mediocre and our students indifferent" (1984, p.19).

While blaming graduate schools and professors for failing to give the necessary attention to teaching is fair game and has been a popular sport for decades, the policies of undergraduate colleges for recognition, promotion, and tenure are the heart of the matter. Good teaching is not rewarded adequately, as every aspiring professor knows or soon learns.

The current reform reports recognize that undergraduate colleges do not act in their own best interests in either the recruitment or reward of good teaching, but the academic value system spreads beyond any single campus. The payoff for research is considerable in terms of national recognition, access to funds, and upward mobility. Until colleges can come up with a reward system that has equal payoff for good teaching, I would predict another round of reform reports in the Year 2000 that will remind me of the man, who when asked why he didn't do more to tackle his complex problems, replied "I have only two hands, and I'm wringing them."

If we could embed teaching fitness and learning fitness in the culture in the way that physical fitness seems to be, then teachers would teach and students would learn because those activities lead to a higher form of human development and are deeply satisfying in themselves. The difference between current rewards for physical fitness and teaching fitness is that there are no conflicting voices with regard to physical fitness. No one says, "Go ahead and be physically fit if you want to, but

just be aware that it won't get you anywhere."

The fact is that as individuals, most faculty members derive more pleasure and satisfaction from teaching than from research (Cross, 1977). It is in their collective voices, represented in the academic culture of colleges and the preparation of graduate students, that the conflicting message is sent that good teaching is desirable but research is rewarded.

The goal of colleges and universities should be to strive for consistent rewards and maximum involvement of everyone on campus in the learning program. Administrators, teachers, and students need to be united in the priorities they give and the rewards they distribute for contributing to student learning. That means that there is no sacred turf. Faculty are not solely responsible for academic learning any more than student personnel administrators are solely responsible for student development. Presidents and their administrative colleagues cannot distance themselves from the academic programs of the college any more than faculty can absolve themselves from responsibility for the reputation of the institution and its fiscal and academic solvency.

Education is what remains after subject matter has been forgotten or become obsolete. If you, as the educational planners for the State of Arkansas were to look at your alumni in the year 2000, you would find little retention of subject matter. What would you hope to find?

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