

## Education Notes

### Titles

Educating: Inventing the American Future  
The Crisis in Science Education:  
Information Specialists and Citizens  
The Professoriate of the Future  
Robots and Computers: Magnifying Mindpower  
Excellence: The Only Standard  
Exploding Knowledge: The New Frontier  
Forging Values for a New Century: Tradition and Renewal  
Minority and Majority: Which is Which?  
E Pluribus Unum: One from Many  
The "Me" Generation: Individualism vs. Commitment

### Idea:

#### Important Contrast:

- i) in K-12, Michigan ranks near top in spending per student, but near bottom in achievement
- ii) In higher ed, Michigan ranks near bottom in spending per student, but near top in achievement

What is difference?

- i) First, the intensely competitive marketplace that colleges face...competing for the best students, faculty, funding...  
...not only with other institutions in the state, but indeed throughout the nation and the world.
- ii) Second, the autonomy and independence universities have to control their own destinies--to develop their own business plans to respond.

It could well be that our K-12 schools are so overwhelmed by red-tape, bureaucracy--and operate in such a weak marketplace (with no incentives for quality), that they just cannot improve.

Note same thing applies on national level:

US spends more of our GNP on education than Japan or Germany (\$328 B...more that for any other public service, including national defense).

Yet function illiteracy in Japan runs at 5%... here it's between 20% and 30%.

Explore difference between higher ed and K-12 more:

Funding:

K-12 very well-funded  
Public higher ed poorly funded  
(Private higher ed???)

Market:

K-12 has no competitive market  
(unless "choice" appears)  
Higher ed has intensely competitive market  
(3,500 institutions competing for students, faculty, and funds)

Independence

K-12: like planned economies of eastern Europe  
...failing just like these have  
Higher Ed: "capitalism", "free enterprise"...

Prestige:

K-12 teaching: bottom of social ladder  
Higher Ed: high prestige

Talent:

K-12 teachers: get bottom of barrel  
Higher Ed: intensely competitive

### **Albert Shanker**

Some recent research on the effect of public speakers on an audience...

...the audience is able to pay attention and remember most of what a speaker says for the first 10 minutes

...for the next 10 minutes, their minds begin to wander

...then, after 20 minutes, the majority of people in any audience begins to have sexual fantasies

"So at least I want you to know that you will enjoy a part of my speech."

In public education in America, whenever a new idea comes along, there are two responses:

- i) "It's impossible! It will never work."
- ii) "We've always been doing it, we're still doing it."

The reform movement started 6 years ago with A Nation at Risk is still moving along... but we are beginning to recognize that we need to consider a drastic overhaul.

We have essentially been taking the system we have now for granted--assuming it is a good] system, and all we have to do is polish it up.

Instead, we need major restructuring.

Our first inclination is to think that K-12 is merely failing with minorities and at-risk kids. Not so! International comparisons demonstrate the real weakness.

Even if we don't include the dropouts, we are only educating 15% to 20% of the kids to an intellectual level capable of functioning well in the everyday world --only 20% could write an adequate letter.

Only 12% of 17 year olds could tax six fractions and put them in order of size.

The high point is represented by those who can really enter college ready to begin college-level math/science or reading of technical material. Here, only 5% of high school graduates are up to snuff.

We are educating only about 10% to 20% of our youngsters ...and nothing in this assessment was intellectual (Shakespeare, Dickens, algebra, trig,...) Just the kinds of things that one would expect a not particularly intellectual, fairly well-educated citizen to know or be able to do.

We are reaching only a relatively small number of kids...

If you were running an automobile plant and about 90% of your products were turning out pretty well, you'd say, "It's a pretty good system, let's just tighten up the quality control."

But if you were turning out 80% lemons, you would begin to question the entire process of production. and I suggest that this is precisely what we need to do with respect to schools.

If we wanted to have a system that screened kids out and let only a few of them through, we've got that. But we do not have in schools, as they are now organized, a system that intelligently thinks about kids in the same

way that a good business would think about its workers and managers--that is, in terms of how we get them to succeed and therefore make our company work.

The fundamental flaw in the system is our assumption that the teachers are the workers who deliver knowledge to the kids. The system is not based on the idea that the student is a worker and that nobody can educate anybody else.

The student has to listen, the student has to write, the student has to read, the student has to imagine.

If students are workers, what kind of a workplace is a classroom or school? What is it most like? Not a coal mine or a steel mill. But rather an office.

But imagine yourself organizing an office in the following way: "Sit down at this desk with 30 other people in the same room doing the same work. You are never to talk to them, just do your own work.

And here's your manager, she'll tell you what to do.

After 45 minutes a bell will ring; stop doing what you're doing and move up to room 409--where you will have 30 other workers doing a different kind of work...

This system makes a lot of sense, if you view the kid as an inanimate object, passing down an assembly line, being worked on by others, teachers, the real workers.

First the English teacher hammers English into him.

Then 40 minutes later he goes off to the math teacher who screws mathematics into him.

We ask children to do something that most adults can't do, and that is to sit still and keep quiet. If I were to ask my own kids to sit still and keep quiet while I stood in front of them and lectured for 5 hours, a truck from the Society for the Prevention of Cruelty to Children would come and cart me off.

Problem is that people don't learn at same rate...yet that is the only way that lecturing will allow learning to occur.

We call on kids, ask them questions, and humiliate them in front of their peers. I know that in various activities I was humiliated when I was a kid. Those things, I just decided, were not my game. I wasn't going to do them. I got to dislike them intensely.

Further, we also know if we manage any sort of business that if we want our workers to produce for us and with us, we do not humiliate them. But that is exactly what we do in a classroom when we call on a kid who doesn't have the right answer.

Problem is that we behave as if WE teach kids; the teachers are the workers and the kids just have the knowledge poured into them.

Essentially what we have is a structure in which we assume that kids are inanimate objects; we're not really engaging them at all.

"We're only going to teach you in one way and if you don't learn it that way, it's just too bad. We're going to talk to you. Occasionally we're going to humiliate you by having you perform, even if we know you can't perform in front of all your colleagues."

We need a structure in which the STUDENTS are the workers.

The teacher is not the person who pours knowledge into the kids; the teacher is a manager, and has the same job that the manager of any company has.

...How do I get my workers to come here wanting to work?

...How do I get them to do the work?  
...How do I get them to manage and be interested in the quality of their own work?

If the important thing is to get our student workers engaged, then it is clear that we have to question what we now do in school. And we have to view teachers as managers who must essentially ask the same questions that any manager in any large institution asks: How do I get my workers to want to come to work every day? How do I get them to work and work well?

There are many other reasons we have to restructure the schools.

We have 2.2 million classroom teachers now, and given the demographics of the US work force, there is no way in which we can get this many people of the caliber that we need.

We would need 23% of all the college graduates for the next decade. (We might get the bottom 23%, but not what we need.)

Some fundamental issues:

- i) We need to raise teacher's salaries
- ii) We need to reduce class size
- iii) Teachers should have more time to observe each other.

All of this argues for the need to move away from self-contained classrooms. We need to move to teams of people where there are outstanding persons on each team.

We need to build in parental involvement.

We also need real school choice. Note that under most present schemes, there are no incentives or disincentives. We need a real competitive marketplace.

What we need to do is to stop thinking about how to fit teachers, kids, and parents into an old-fashioned factory. (Note that even modern business is abandoning the factory model.)

Need to move to a model in which teachers start thinking as managers and realize that they're not working with inanimate objects.

They're dealing essentially with systems of incentives--for teachers themselves and for young people as well.

One of the major reasons why we have not had change before is the political structure of our schools. School boards have to be responsive to people. THE CEO of a school system meets in a public meeting once every week; and everything that is wrong with the schools is brought up right there. Hence, he says to all the principals: "Look, there aren't any rewards for doing good things in this system, but, boy, you've got hell to pay if you make a mistake. No bad news!"

What we need instead is a structure that allows schools to be independent (although this will require much better people).

### **The Challenge (Gene Maeroff, Carnegie)**

Most folks don't understand how dire the situation is for big city schools. If they did, they would be frightened to death at the

realization that if there is not significant change during the 1990s, the kind of society that we know has very little chance of continuing to exist. The democratic structure can in no way bear the weight of hundreds of thousands--indeed, millions--of young people coming into society utterly unprepared to participate in any meaningful way.

Number of children born today below poverty line is twice that who are presently living in poverty--hence in 10 years, problem will be twice as bad--in 20 years, 3-4 times as bad. We cannot bear this magnitude of population living in poverty.

For vast majority of minorities, the level of work is embarrassingly simple. For many of these students, a diploma is a very empty credential because the students have in no way read the same thing that white students in the suburbs have read.

Key recommendations:

Need partnerships that reach beyond the schools--and involve the parents

Students have to gain a sense of belonging so that they feel connected to the school and regard themselves as a community of common concern.

The teaching and learning structure of the school must be more flexible

There must be a curriculum that has coherence and connections.

#### **Rand Study (Paul Hill)**

The problems of big city school systems are not necessarily permanent or intractable.

However, a long-term commitment to stick with the problem is essential, not simply on the part of school people, teachers, principals, and superintendents, but also urban CEOs and foundation leaders.

Basically the problems of big-city schools are much more severe than any school system can cope with. Only when the whole resources of the community are brought to bear--and in particular when the school problem becomes the community's primary issue--do these changes take place.

A failing urban school system can be turned around only if the entire community unites on its behalf.

"Choice" plans that encourage parents to seek alternatives to public schooling are not necessary for improvement of big city schools.

Key reform strategies have two strands:

- i) an outside strand that gathers broad community support and resources
- ii) an inside strand that changes the way schools are run and instruction is delivered.

The schools that changed the most had teachers' unions that became a major part of the coalition to create the improvement plan.

There was serious bloodshed caused by a serious

effort to simply and restructure the administrative structure of the school district. The extremely elaborate staff and line organizations that now exist normally cannot change rapidly enough to affect the schools. And where we saw the most significant change, those changes did happen.

Schools change very slowly, however.

#### **Iacocca**

It's no secret that we aren't getting enough young people who are equipped to compete in the high tech, global economy that we live in today. American industry has a big stake in education, but I don't think most of us who run companies do much to protect it. Chrysler pays \$25 M a year in school taxes--in a sense, the schools are our suppliers--they supply us with the most important and most expensive assets of all--our people. Maybe business leaders all over the country should] descend upon the school boards, lock arms with the parents and other community groups, and begin making some tough demands.

#### **Greenwald**

Notes that Michigan ranks near the top in spending per student, but near the bottom in high school graduate rates.

#### **International Competition**

Signs in Michigan

Look at the prosperous areas in Michigan

Grand Rapids  
Oakland County  
Grand Rapids

and contrast these with impoverished areas

Detroit  
Battle Creek  
Benton Harbor  
Saginaw  
Muskegon

Real difference stands out: education!!!

"Most economically successful areas are those with educated and highly skilled labor force.

In Ann Arbor, 90% of people 25 or older have completed at least 12 years of school:

Saginaw: 57%  
Flint: 60%  
Jackson: 63%  
Lansing: 72%  
Kalamazoo: 73%  
Grand Rapids: 67%

Japanese

"American business is not serious" said a French investment banker.

"American's look ahead 10 minutes while Japanese look ahead 10 years..." (Morita, Sony)

"Recognition of serious American flaws (e.g., the outrageous gap between rich and poor) should come as no surprise. We've been talking trade and budget deficits, homelessness, crime and drugs for years."

"But the revealing shock comes through foreign eyes which strip away the illusion. Dramatic changes in the Soviet Bloc offer unimagined opportunities for reshaping the world. There are great risks in the transition,

but reason for great hopes. And there are new threats”  
“The last ten years have witnessed the substantial abdication by our governments of their responsibility in critical society areas, including education”. When matched against the Japanese commentary, it is virtually cause and effect.

Without the opportunity for all Americans of limited or virtually no real income to obtain the benefits of an outstanding education, the class gap will continue to grow. And we will develop an educational elite in the 19th Century European tradition, to be sure, with all of its unfortunate results.

America’s strength has been built on the diverse backgrounds of its citizenry coupled with upward mobility based not on class but on merit.

Japanese trade negotiations:

US should upgrade schools, invest in scientific research, close the Federal deficit, and take other drastic steps to improve American industrial competitiveness.

“If the US wants Japan to change its system, the US must be more ready to correct its own shortcoming. We can’t solve our trade imbalances looking at Japan alone.”

American high schools and colleges must upgrade the teaching of mathematics, science, and foreign languages.

### **Stroud**

Joe Stroud’s 4 points:

1. Need more tax support for education...  
Education is so much the key to our future that we had better place a higher value on it.  
Must reshaping state’s priorities, gradually putting more into schools than into other state obligations.  
Lottery experience is cause for cynism.  
Fact that the state offset the lottery revenue by cutting back on what would have otherwise been invested from the general fund has created a deep distrust on part of voters.  
We have to wrench the state’s priorities around and make education far more the centerpiece of its efforts.
2. Reshape the schools and make them more effective.  
Try to bring about curriculum improvements, to raise standards, to better focus efforts.
3. Devising an alternative tax method  
Shifting from overdependence on property taxes.  
Unless Michigan finds a way to get away from its overdependence on property taxes, we will continue to have tax revolts.
4. Equity issues: extremes between rich and poor districts  
This inequity continues to assure that many of the state’s most needy kids will get the least investment in their education.  
Need a difference school aid formula.

### **Higher Ed Roundtable**

Of class of 2001, which began kindergarten last fall,  
25% are living below poverty line  
15% have physical or mental handicap  
14% born to teen-aged mothers  
10% have illiterate parents

Ross Perot:

“The hardest thing I ever did was the year I spent trying to improve the Texas public schools.

It was the hardest, meanest, bloodiest thing I ever tried to do.”

## **Bok**

Universities are best in the world

...currently the choice for students all over the world.

...Japan ranks 7 of top 10 universities in US

...if anything, our lead has widened in past 20 years

Big problem for American education is not in our universities but in our public schools.

After five years of reform, we are still far behind.

Of course, schools are not solely responsible for these results; drugs, crime, television, disintegrating families,...

Interesting contrast shown in survey of mothers whose children were not performing up to expectations:

American mothers thought their child was not smart enough

Japanese mothers thought their child was not working hard enough.

Only good thing about reform movement is that we appear to be concentrating primarily on enhancing the skills and knowledge of students-- rather than using education to unite people or assimilate immigrants or promote equality or integrate the races.

Successful schools are marked by:

- i) freedom from external control and regulation that leaves more power in the hands of the individual school to plan its own educational program
- ii) strong leadership in trying to unite the faculty and students by articulating a clear academic mission for the institution
- iii) lot of teacher participation in trying to decide how to teach, what materials to use, and what curriculum to follow
- iv) most significant was a lot of parental involvement in life and progress of the school

If you look at these findings, it is not surprising that many of the reforms are not working very well...

Instead of giving more freedom to the schools, the first wave of reform tried to impose changes from above.

Clearly we don't need more federal regulation...indeed, any expensive federal programs!

What do we need?

If schools are to compete, if they are going to have more autonomy and less regulation, they will need much better personnel.

Here the current situation is remarkably bleak. Most principals are poorly trained and rather arbitrarily selected.

Over half of all teachers in America will be replaced in next several years, yet the least-qualified college students now go into teaching--the best qualified of those who have received such training don't go into the schools, and the better-qualified of those who do go into schools leave teaching the earliest.

As a result, our schools are eventually left with the worst of the worst of the worst...

Recommendations for Bush:

- i) speak out from bully pulpit and spread good ideas more rapidly among the thousands of school districts across the country
- ii) help in training better personnel
- iii) try to encourage experimentation and evaluation in order to find solutions to our most important educational problems.

(Note: None of these initiatives need cost much money.)

Recommendations for universities:

- i) We need to spread out more to school districts by reporting on new methods of instruction and new ideas for reorganizing and improving schools.
- ii) Need to mount much more effective programs than those we have had to train teachers, principals, superintendents
- iii) Need to work with schools to experiment with new techniques, new texts, new methods of instruction.
- iv) We must look at our schools of education--these have had low status on our campuses--being known as a haven for mediocre students and mediocre faculty (In fact, if you look at reforms of past 5 years, it is striking to see how little mention is made of schools of education.)

We must reexamine our priorities and ask whether we are not partly to blame and whether we should not put a much higher priority on doing what we can to help improve the quality of public education.

The situation in our schools is grim. We have very little time to lose.

### **Louis Harris**

By 2001 US may be world's #3 power... behind Japan and Europe

Ford is the prototype of what major American companies will be like... producing 40% of cars in Far East, 40% in US, and 20% in Europe.

To qualify for work in this new global economy a young person of 2001 must have a global perspective--an intimate knowledge of what the world outside the US is like.

Need cross-cultural comprehension and understanding.

America will be faced with rising living standards in other emerging industrial nations produced by work forces that have out-competed our own.

This will pose some terrible problems for American society: One solution is that labor in this country will have to work for much lower wages in order to compete. Another is to create a two-tiered labor force--one that pays \$20/hr for skilled craft labor, and then to pay less-trained people from poverty settings.

Of course, there is yet another option: educate, train, and utilize a labor force that the world has not seen before...one that can think creatively for themselves and to have a proper frame of reference to know where to get information when they do not know answers.

Here the singular mark of this economy would be that the labor force would be distinctive, unique--not the technology or the methodology.

Irony of the 20th century is that US technology has remained #1--even dominant. But when our technology is employed by much cheaper or more dedicated labor, then we consistently find ourselves out-produced.

Note that for over a decade, we have not seen real income increase in this country.

The three legs of the US economy in 2001 will be

- i) education
- ii) women
- iii) minorities

Note: by the end of the 1990s, US will have either succeeded or failed in the pivotal issue of how to open the doors of opportunity to minority young people.

If we succeed in learning how to do this, we will have created a strongly competitive America that will be the envy of the world. But if we fail, ALL OTHER BETS are off, simply because we will be mired in a system in which the baggage we will have to carry in unproductive human beings, mainly the minorities, will be too great.

The irony is that if we properly utilize the elderly, women, and minorities, we will no doubt have solved the social security and Medicare funding crises, and will have reduced dramatically the welfare rolls.

The problem with education in America is not that we have slipped from standard we used to meet. Rather, the hard truth is that there have been few substantial changes in education in the US, but almost the entire world around us has changed radically.

In short, we have to become a nation that thinks for a living. The key for education lies in standards that must be adopted and strongly enforced.

Difference between a "design standard" and a "performance standard"...

A design standard is put together on the basis of certain set ingredients in a system--and everyone is told to adhere to the design.

A performance standard is constructed with clear cut criteria and objectives; they MUST be achieved, no matter what. But you leave it up to the people who build the system and operate it to creatively reach these.

Unfortunately our education system has been geared to design standards. The people on top tell those below them precisely what to do, and then these people tell those below them...until the weight of the process falls on the principles and the teachers. It just does not work, but everyone says, "All I did was precisely what I was supposed to do, just as I was told."

What is missing is real accountability. BY contrast, people must be told, here is the performance standard.

You must figure out how to carry it out in your community, with your students.

### **Technology in Education**

If education has progressed like computers, we could receive 16 years in 10 minutes for 5 cents.

Yet, the real productivity of American education has clearly declined (as has its quality, apparently)

Prime reason is that education invests a smaller portion of its resources in labor-saving technology than any other major industry.  
(Estimated at 0.025% compared to 2.5% for US average)

Of course, over 90% of cost of education is in labor.

Yet, even because education is so labor intensive, the potential for improving productivity is enormous.

Of course, the most sophisticated learning experiences--seminars or Socratic dialog-- cannot be automated. But most learning, especially at K-12 level, is far more routine and could be enhanced by use of computers.

This is already being seen in military, proprietary trade, and technology schools. Indeed, estimated that industry spends \$15 B per year on computer-based instructional systems.

### **Scully Center**

Education, like industry, can improve by restructuring operations following some very simple principles:

- i) Go for quality and build it in the first time whenever possible.
- ii) Reward success in producing quality.
- iii) When a system for rewarding quality is in place, let the people on the firing line figure out how to get the job done.
- iv) Get rid as much of the bureaucracy and as many of the intervening rules and regulations as possible.

Proposed that Bush announce an education goal similar to the Mission to the Moon:  
"Americans are going to be the best in the world at educating and training our people, whatever it takes!"...E.g.,

- i) overtake Singapore, now first in 12 grade biology, from our current ranking of dead last among 13 countries
- ii) overtake Canada and Norway, where 25% of 18 year olds take physics and chemistry for two years each, compare to less than 1% in US
- iii) Overtake Japan and Korea, now tied for first in general science from US at 8th
- iv) Overtake Japan in math, which will require that our high school graduates master more math than our COLLEGE graduates do now.
- v) Increase functional literacy rate from 70% to 90%, comparable to that of Europe and Asia
- vi) triple expenditures made by American firms on education and training of workers, to

equal the expenditures made by their most able foreign competitors now.

Suggest four specific missions

- 1) US will do what is necessary to assure that every child starts school healthy and intellectually prepared to take full advantage of what school has to offer; no longer will millions of children enter kindergarten as damaged goods, already marked for failure.
- 2) Second, country will dedicate itself to restructuring elementary and secondary education for high performance.
- 3) US will turn its technical genius to the problem of education, to make our schools a showcase for the contributions that information technology can contribute to learning.
- 4) US will provide a second chance for every American now in the workforce to get the skills they need to contribute effectively in an information based economy.

Sure, more money will be needed. But money alone will not solve the problem. US is already a leader in spending on education. It is essential to get much higher levels of quality for every dollar spent.

Key is to get the incentives to make sure there are appropriate rewards for success and real consequences for failure.

If we want quality, we should reward it.

If we want student progress, we should reward it.

If we want efficiency in the use of public resources, we should reward it.

No business in American could survive with the failure rate we have long tolerated in our schools. As much as 25% of the cost of higher education is in the cost of remediation. Cost to employers is \$25 B per year.

Schools will only succeed if they replace the basic structure that was put in place 50 years ago to meet the needs of a smokestack economy with a new structure that meets the needs of an information economy. Need the invention and implementation of entirely new approaches to the organization, management, and staffing of our schools.

Of course, first objective is to fill our schools with first rate teachers and administrators and then set up performance-oriented systems in which the goals for students are clearly specified, and rewards go to schools in which students make substantial progress toward those goals.

One specific proposal is to allow states and communities to merge various federal, state, and local funds.

i) combine funds provided for remedial education, handicapped, bilingual, magnet schools,...

ii) combine funds for job training, adult education,...

iii) permit integrated social services strategies

Develop entirely new science, mathematics, and technology curricula.

Build a national communications highway for education that could be used by students of all ages in the delivery and exchange of television and computer based instruction and information.

Develop a network of demonstration schools

Design a national program to teach teachers technology.