

# **UC Office of the President**

## **Influencing K-12 and Higher Education Nationally and Internationally**

### **Title**

“Education in a Technological Economy: Some Observations on the Nation’s Schools,” UCLA Business Forecasting Conference, University of California, Los Angeles, Los Angeles, California

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involve laser technology and robotics. And technology is transforming a host of other occupations as well, from health care to food processing to energy production. These developments are just the most recent manifestation of a profound truth summed up by Francis Bacon nearly four hundred years ago: Knowledge is power.

It is a truth that seems to be better understood abroad than it is here, despite our current position of technological leadership. You are all familiar with the statistics and developments that indicate our international lead in technological fields can no longer be taken for granted. It is not just that the Japanese make automobiles more efficiently than Americans and have government subsidies for development and export. It is not just that the South Koreans recently built the world's most efficient steel mill, or that American machine tools, once the pride of the world, are being displaced by German products. It is also that these developments are a sign of the redistribution of trained capability throughout the globe. Knowledge, information, and skilled intelligence are the new raw materials of international commerce and will be the basis of the world's future economic order. Yet our national investment in basic research--the source of new knowledge--has declined as a percentage of Gross National Product since the late 1960s. During this same time many other nations have increased the resources they devote to the search for new ideas. This investment by such industrialized

countries as Japan and West Germany is now paying off handsomely, especially in terms of technological and economic growth.

As a university president, I am of course concerned about this national trend. But I am even more concerned about another trend, one that is larger in its dimensions and more far-reaching in its implications. That is the deterioration in the quality of our nation's schools.

I have had the opportunity to learn just how drastic that decline in quality has been because of my work with the National Commission on Excellence in Education, a panel of leaders from education, the corporate and foundation worlds, industry, and private life who in 1981 were asked by the Secretary of Education, T. H. Bell, to examine the quality of education in the United States. The Commission's report was released last April, and a number of reports issued since then by other groups have validated our central argument: that the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our future as a nation and as a people.

Consider, for example, some of the statistics that were brought to our attention during our hearings on the condition of American education:

- ° International comparisons of student achievement, completed a decade ago, reveal that on nineteen academic tests American students were never first or second and, in comparison with other industrialized nations, were last seven times.
- ° Some twenty-three million American adults are functionally illiterate by the simplest tests of everyday reading, writing, and comprehension.
- ° The College Board's Scholastic Aptitude Tests demonstrate a virtually unbroken decline from 1963 to 1980. Average verbal scores dropped over fifty points and average mathematics scores dropped nearly forty points.
- ° Many seventeen-year-olds do not possess the higher order skills we should expect from them. Nearly forty percent cannot draw inferences from written material; only one-fifth can write a persuasive essay; and only one-third can solve a mathematics problem requiring several steps.
- ° The proportion of high school students taking a general program of study has increased from twelve percent in 1964 to forty-two percent in 1979. This is a telling statistic because a general program of study prepares students neither for college nor for work.

The evidence presented to us pointed overwhelmingly to one dismal fact: Increasing numbers of American students are indeed graduating from high school prepared neither for further study nor for productive employment. And this is happening at a time when the accelerating pace of technological development is making it all the more urgent for students to be educated more broadly and more deeply than ever before. The Education Commission of the States' Task Force on Education for Economic Growth put it this way:

For productive participation in a society that depends ever more heavily on technology, students will need more than minimum competence in reading, writing, mathematics, science, reasoning, the use of computers, and other areas. Mobilizing the education system to teach new skills, so that new generations reach the high general level of education on which sustained economic growth depends, will require new partnerships among all those who have a stake in education and economic growth. The challenge is not simply to better educate our elite, but to raise both the floor and the ceiling of achievement in America.<sup>1</sup>

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<sup>1</sup>"Action for Excellence." Report of the Task Force on Education for Economic Growth, Education Commission of the States, June 1983, p. 9.

How do we go about the task of raising "the floor and the ceiling of achievement in America?" Allow me to offer a suggestion in response to that question by describing briefly the conclusions the National Commission on Excellence in Education reached after eighteen months of sifting through data and testimony from hundreds of students, teachers, school officials, parents, and other citizens from throughout the country.

First, we became convinced that our educational problems are real enough and serious enough to put the nation at risk, not just in terms of its economic or industrial or military strength but also in terms of the intellectual, moral, and spiritual strength of our people which knit together the very fabric of our society. A high level of shared education is essential to a free, democratic society and to the fostering of a common culture, especially in a country that prides itself on pluralism and individual freedom.

Second, we decided that one consistent thread in the testimony we heard from students, teachers, administrators, State officials, business leaders, and minority groups alike was a growing impatience with the shoddiness in many walks of American life, and the complaint that this shoddiness is all too often reflected in our schools and colleges. As is true with our society generally, we have been expecting less from our students and we have been getting it.

Third, the Commission concluded that as a nation we can and must do better. The decline in American education has many causes, of course. The social and educational upheavals of the 1960s and 1970s, for example, brought many useful changes to our schools, such as a dramatically improved and overdue access to larger numbers of our youth; but they also brought a dilution of the curriculum and a shifting onto the schools of responsibilities that traditionally belonged to the family, the church, and other institutions in our society. The past few decades have also seen the decline of the teaching profession as a respected and rewarding life's work. And despite the dramatic lesson of Sputnik in 1957, during the past ten years or so science and mathematics education has generally received less attention--and less support--than it clearly warrants.

The Commission concluded that the decline in American education stems more from weakness of purpose, confusion of vision, underuse of talent, and lack of leadership than from conditions beyond our control. What is needed is a strong national commitment to excellence throughout our educational system--not just in certain areas or in certain schools--and a commitment to excellence that is not made at the expense of equitable treatment for all our students, diverse as they may be. The twin goals of equity and schooling of high quality have profound and practical meaning for our economy and our

society, and we cannot permit one to yield to the other in principle or in practice.

The Commission recognized that the nation's 17,000 school districts are under local control, and so our recommendations for change were framed in terms general enough to be adapted to the needs and requirements of individual schools. We concentrated on five areas where we felt change was needed most: the amount of time devoted to learning; the content to which students are exposed; the expectations and standards to which they are held; the improvement of teaching; and the importance of leadership and the role of government. We urged strong and immediate action in each of these areas as a prerequisite for real educational improvement.

The overwhelmingly positive response to our report and to the other major assessments of American education published in recent months has convinced me that this country is ready for educational change; I see what is happening now as the most significant educational reform movement in a generation. Just last week I attended a National Forum on Excellence in Education, the last of the national gatherings convened by Secretary Bell to discuss what can be done and what is being done about the condition of American education. I found that the impetus for change is gathering strength throughout the country as individual states begin to raise standards and requirements, experiment with proposals for lengthening the school day and

the school year, and consider ways to improve the status of the teaching profession. State and local task forces have been established across the nation to review the recommendations in recent reports and to consider how to respond. Nearly every state legislature will have major educational reform bills on its agenda during the 1984 sessions. Congress will, as well.

One of the most encouraging developments in the national movement for educational reform is the willingness of the business sector to become involved. The practical reason for this willingness, of course, is obvious: Businesses have experienced firsthand the steep economic costs of poorly educated employees as many corporations have had to provide those employees with skills they should have learned in high school. But I think the spirit of cooperation that seems to prevail these days also has something to do with a new sense of partnership with education generally, a partnership that was severely strained during the sixties and seventies. At any rate, there are many promising experiments underway. A number of cities have "Adopt-a-School" programs in which a local company assists a local school--in one of the business-school partnerships in Houston, for example, chemists and physicists from a leading research and development firm teach science classes for gifted students as a way of complementing the efforts of regular teachers. California's MESA program--the initials stand for Mathematics, Engineering, Science

Achievement--was formed in 1970 with support from the business and education communities to improve the preparation of minority students in these fields and to encourage them to consider science as a career. It now operates in some 125 California high schools as well as in Colorado, New Mexico, and Washington. And over the past few years educational officials in this state have been working with the California Roundtable--composed of corporate and business leaders--to improve education in a variety of ways, including the formation of local networks of business people, teachers, parents, and administrators to see that changes are made. I encourage each of you to become involved as well, to do what you can to see that our schools become as excellent as they should be and as effective as they must be. There are many opportunities to help.

I've devoted a good deal of time to describing the shortcomings and problems of American education. Yet I believe that the other side of these problems is the opportunity to take a giant step forward in education and, by so doing, to make a solid improvement in the quality of American life. In one sense, the difficulties we are experiencing now in education are a reflection of the transition to a new kind of economy and a new kind of society. You may have come across a recent book called Global Stakes which argues that our economy is undergoing a profound

transformation that will require us to change the way we think about economic policy and practice:

Whereas American wealth and power have traditionally been based on natural resources and on capital investment in physical plant and machinery, the balance is now tipping toward investments in people and knowledge as key resources. This is not to deny the continued importance of natural resources and the need to conserve nonrenewable ones more wisely. Nor is it to repudiate the role of capital and the need to control inflation more vigorously. But once the concept is fully grasped that knowledge should be seen as a strategic resource with an importance equal to or exceeding natural resources and physical investments, then a chain of propositions follows that will change the way national priorities and strategies are set in America. The most important among these propositions concerns education, and the strategic long-term need to resupport and reorient the American system of education.<sup>2</sup>

Such transitions are never easy, and they are never without costs. But if we care about the future--not just our economic

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<sup>2</sup>James Botkin, Dan Dimanescu, Roy Stata, with John McClellan, Global Stakes. Ballinger Publishing Co., Cambridge, Massachusetts, 1983, pp. 7-8.

future but our future as a society--we will see that the transition to a society based on knowledge and learning will take place as rapidly, and as thoroughly, as we can manage.

Thank you.