

# Science and Education in the 21st Century

James S. Kahn

It is time to devise a new educational strategy for the 21st century.

The educational system we know today was brought to these shores by the early immigrants, predominantly Europeans, who unpacked all their resources—their culture and ethics included—when they arrived.

Close families, little if any divorce, a strong work ethic, strong religious values, an appreciation for the importance of education, pre-schooling in the home, and strong discipline—all were recognized traits of the frontier society in America.

The school system, brought to the United States by our forefathers and influenced by their values and beliefs, still prevails some 400 years later...but functions with mixed results that are, at best, partially successful.

Wave after wave of immigrants has been educated by this system. It has afforded many of them the means to enter the economic mainstream, clearly a desirable goal for any educational system. It permitted this country to become the mightiest nation in the world.

Unfortunately, this strategy is no longer working. Results of student tests from coast to coast attest to this. The test scores are pitiful, particularly in our urban centers. Cries for reform are heard across the nation—particularly in the cities. These school systems are the precursors to what may become the universal state of education everywhere in this country.

Our nation's educational strategy has been challenged by the major attitude, value and behavior changes of the last several decades. There are many more broken families than ever before. Individuals of all ages suffer from lack of discipline—mental, physical, and intellectual. Fewer children are fortunate enough to experience home pre-schooling, so common when only one parent worked and divorce rates were lower. Recent demographic studies indicate new waves of cultures sweeping into the cities. America today bears little—if any—resemblance to the country the immigrants settled during the 1600s. In spite

of this, our educational strategy remains basically unchanged. We still use classrooms, desks, teachers, and blackboards. Is this the appropriate strategy for today? I think not.

One has only to consider our loss of prominence in educational achievement and economic power to recognize today's leadership challenges. These challenges generate targets of opportunity. One such is education, which should be considered in any set of national strategies developed for the 21st century. However, prominent consideration should be given to the appropriate contemporary ways of devising the new strategies.

The key elements that should influence new educational strategies are the sets of interactions derived from the current demographics of the major American cities, the failure of U.S. science education, the existing U.S. educational strategy, and the recognized societal changes and trends in the country over the last several decades. It is time to devise a new educational strategy for the 21st century, one which explicitly recognizes the need to understand today's students and the society that surrounds them. Our educational delivery systems have been and are consistently similar. But the students and their needs have changed! And so, too, must the education system!

With few exceptions, the consumer (student, parent, and prospective employer) has been powerless. In the limit with the system we know today the conclusion is unmistakable: the system will have no consumer support and the concept of democracy as we have known it will wither. The first signs have appeared: the inability to permit the new demographic population to successfully and promptly enter the economic mainstream. Frustration and chaos on scales never before seen will follow. Can a democratic society as we know it manage this reality? Unlikely, without very different means of government.

A commitment for a review of U.S. educational strategy is the key challenge today. It is necessary, but not sufficient, that states

agree on new goals, achievement levels, and proficiency tests for both student and teacher. Unless educational strategy reflects today's students and their society, we will merely delay the inevitable—another crisis in education a decade from now, coupled with exhortations to "do something."

In the meantime, it is critical that nontraditional methodologies become more acceptable and more incorporated into the traditional school system. In science education, at least, some steps can be taken without full development of a new national strategy. Scientists, engineers, and educators should continue to acknowledge assertively and recognize, to a greater degree than ever before, that other means of educating can be as powerful—if not more appropriate—in this new age.

More than four million people visit Chicago's Museum of Science and Industry annually. Our exhibits are our classrooms—no desks, no chairs, no blackboards, no failures. One well-designed exhibit will satisfy visitors of all ages, and of different sexes, backgrounds, and levels of technical and scientific maturity.

The concept of an integrated learning experience, where one display or set of interactive exhibits builds the basis for the next one in an unpressured, visitor-controlled experience, is the next plateau in museum nontraditional education methodology, one we are working on at the Museum of Science and Industry.

Encourage your communities to recognize, as many of us already have, that other methodologies can complement and support traditional education. This can only have a positive effect.

The contemporary science museum can be a powerful curriculum supplement to the traditional science program. Teachers and parents will need training for this concept to be fully successful, but what a powerful enrichment to the student in the traditional setting!

A major element in educational strategy for the 21st century will be blending a carefully crafted mix of the educational system as we know it today with new methodologies and educational partnerships which recognize the need to incorporate and amalgamate the qualitative and quantitative societal and behavioral changes that have occurred in our lifetime. This interplay of traditional and nontraditional schooling and new partners is the strategy for the new century.

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