

Renzulli, J. S. (2005). A quiet crisis clouding the future of R & D people. *Education Week*, 24(38), pp. 32–33, 40.

A Quiet Crisis Clouding the Future R & D People [Commentary]

By Joseph S. Renzulli

Those who own the rights to inventions own the world.

From the political platform of the Japanese Democratic Party, June 6, 2000

“Why,” I asked the three visitors from the Japanese Ministry of Education “are you interested in the work we are doing?” They had come to our research center to learn about the work we do to promote the development of creative productivity in American Schools. I reminded them that our education leaders regularly remind us to look east. “You have the highest scores in the world on international achievement comparisons,” I said.

I’ll never forget the reply! “Very simple dear professor. We have no Noble prizewinners. Your schools have produced a continuous flow of inventors, designers, entrepreneurs, and innovative leaders. We can make anything you invent faster, cheaper, and, in most cases, better. But we want to learn what role this ‘creative productivity’ focus plays in the production of creative and inventive people.” This experience caused me to think about what might be the one great asset of the American education system—an asset that we may be unwittingly losing as attention is turned more and more to cranking up our achievement test scores.

How much are new ideas worth? What are we willing to pay for the persistence, creativity, and task commitment that research scientists or industrial designers devote to following through on innovative ideas with potential high stakes payoff? Can we calculate the economic value, job opportunities, and contributions to social and political stability that result from investments in young people whose potential for creativity and innovation will develop new products, find solutions to unsolved problems, and even develop entire new industries?

Innovation resulting from research and development is widely recognized as a key ingredient to productivity, but the United States may be losing its edge in the culture of innovation. A quiet crisis is building that could jeopardize our nation’s pre-eminence and well being, and this crisis could reverse the global leadership Americans currently enjoy. U. S. productivity growth has slowed significantly since 1973 and continues to grow at a slower rate than our major trading partners. And patent data, one of the best indicators of R & D productivity, also raises concerns about future U. S. competitiveness. Approximately 45 percent of new U. S. patents are now granted to foreigners and the quality of these patents is strong, especially in the high technology areas.

Although many factors contribute to a nation's overall productivity, the education system in any country is a prime source for producing the R & D people of the future. In a recent report the National Science Board pointed out that the United States faces a major shortage of scientists because too few Americans are entering these fields. We are already experiencing a decline in the indicators that track international comparisons in academic achievement. The recently reported PISA study ranked the United States 24th out of 29 countries in the Organization for Economic Cooperation and Development, a Paris-based group that represents the world's richest countries. Our most talented American students rank near the bottom of industrialized nations in mathematics and science comparisons, and only 39 percent of recent American university doctorates in engineering were granted to American students. Thirty-eight percent of all the nation's scientists and engineers with doctorates are now foreign born, however a recent report from the Institute of International Higher Education announced a 2.5 percent decrease in foreign enrollment. The Council of Graduate Schools reported a 28 percent decline in international graduate applications between 2003 to 2004 and a 9 percent decline in the enrollment of first-time international graduate students at the top U. S. universities. The largest drop in applications was in engineering with a decline of 36 percent. International students are turning in greater numbers to the higher education systems of our global competitors and are more likely to remain and seek employment in those countries following graduation. Although our capacity to attract top college and graduate students from abroad remains high, employment opportunities in other countries for our most talented foreign students are increasingly luring these students to return home, and tightening immigration and security regulations threaten to restrict the inflow of foreign students. Even if our net flow of intellectual capital from foreign countries remains high, our domestic development of high-level scientific talent is lagging, and we are relying on inflow, which is increasingly regulated.

In spite of these concerns about our declining reservoir of top foreign and domestic talent, massive investments in the American education system are currently directed toward improving the basic skills of struggling learners. No one can argue against this worthy goal, nor is there any attempt here to suggest that we should deviate from our course that attempts to improve the educational opportunities of all students. This investment will pay off in the form of a more qualified workforce, which is unquestionably an important factor for better preparing the nation's youth for the more demanding jobs required in a knowledge driven economy. Our \$350 billion annual investment in public education, however, has shifted quite dramatically, not only to the detriment of in-depth curriculum at the highest levels in areas such as the sciences and social studies, but also to the detriment of physical well being (i.e., physical and health education) and creative and artistic development, which are now considered peripheral curricular components. Many states test only math and reading, and base school and student accountability on these two areas alone.

But what about support for the highly gifted, creative and innovative young people whose ideas will create the products and the jobs that start the wheels of productivity turning? The federal government provides only \$11.2 million for research and model programs that serve gifted and talented students. Current estimates of federal education spending indicate that only two cents of every \$100 is dedicated to the education of

gifted and talented students. And there has been a slow but steady decrease in state level expenditures for this segment of our school population. In the last few years expenditures for services to gifted and talented students have been severely cut by many state departments of education, and states which formerly were shining examples of high quality programs for the gifted—Connecticut, Illinois, Michigan, New York, and Oregon to name a few, have completely eliminated all funding. Pressure on school budgets has also resulted in a decline in allocations for special programs at the local level. Almost weekly I receive yet another phone call or email saying “our program has been cut.” Based on the 2002 U. S. Census survey of local government finances, it appears that of state money allocated to schools, less than one-half of one percent was targeted as categorical funding to gifted education programs (on average, across regular K-12 school districts). Only 2,424 of 10,549 public K-12 school districts (reporting) received categorical grants for gifted education from their states. Only about 1,800 K-12 districts received more than \$100 per 5% of their enrollment in categorical aid (this excludes states that flow gifted program funds through general funds).

Growth economists believe that improvements in productivity can be linked to a faster pace of innovation and extra investments in human capital, but are we turning our backs on the R & D people of the new century when we fail to support this segment of our school population? Is our education system’s current emphasis on just ratcheting up test scores at the expense of promoting creativity and innovative thinking the way to insure our future as a leading nation in the business of generating original ideas, new knowledge, and even entire new industries?

I refer to this neglect of America’s most gifted and talented youth as a “quiet crisis” because by the time the damage is done it will be too late to reverse a trend that may place our country in jeopardy. Unchecked, this trend will leave a dearth of scientists, engineers, inventors, entrepreneurs, and creative contributors to all areas of the arts and sciences. These kinds of contributions are precisely the things that made America a prosperous and powerful nation through the Twentieth Century. Our innovation stimulated a powerful knowledge driven economy and shaped a country that made its fame and fortune by creating things rather than merely making them. Neglect of our most gifted and talented students, including those who come from limited economic circumstances, will make it impossible for America to compete in a global economy that is driven by new ideas. Improving the achievement of all students is obviously an important national goal. But let us not turn our back on the one aspect of the American education system that has contributed to our prosperity. Dr. Leon Lederman, the Nobel Prize winning physicist, said in 1990, “Once upon a time, America sheltered an Einstein, went to the Moon, and gave the world the laser, electronic computer, nylons, television, and the cure for polio. Today, we are in the process, albeit unwittingly, of abandoning this leadership role” (Berger, 1994).

Berger, J. (1994). *The young scientist: America’s future and the winning of the Westinghouse*. Reading, MA: Addison-Wesley.

Joseph S. Renzulli is the director of The National Research Center on the Gifted and Talented at the University of Connecticut. His most recent work is the development of an on-line enrichment program which can be found at <https://renzullilearning.com>.