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Peterson and Hanushek: The Vital Link of Education and Prosperity

Data from 50 countries over half a century reveal how even a small education gain can mean a big economic payoff.

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Americans are aware of public education's many failures—the elevated high-school dropout rates, the need for remedial work among entering college students. One metric in particular stands out: Only 32% of U.S. high-school students are proficient in math on the National Assessment of Educational Progress. When the NAEP results are put on the scale of the Program on International Student Assessment (PISA), the world's best source of information on student achievement, the comparable proficiency rates in math are 45% in Germany, 49% in Canada, and 63% in Singapore, the highest performing independent nation.

The subpar performance of U.S. students has wide ramifications—and not just for individuals. On an individual level, of course, the connection between education and income is obvious. Those with a college degree can expect to earn over 60% more in the course of their lifetime than those with a high-school diploma, according to U.S. Census data. But there is a nexus between educational achievement and national prosperity as well.

According to our calculations, raising student test scores in this country up to the level in Canada would dramatically increase economic growth. We estimate that the additional growth dividend has a present value of \$77 trillion over the next 80 years. This is equivalent to adding an average 20% to the paycheck of every worker for every year of work over this time period.



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Taking the SATs in Seoul, South Korea.

Where do such astronomical numbers come from? Students of human capital have long known that a country's growth rate is connected to the skills of the workers. And it has recently become apparent from our analysis of differences in growth rates among countries between 1960 and 2009 that the skills that count are reliably measured by standardized tests of math and science such as PISA and NAEP.

We have analyzed all the well-vetted international tests given to students since the 1960s in 50 countries for which test-score information is available. Adjusting for a country's initial GDP (since it is easier to grow fast when you start at a low level), the differences in long-run growth rates are mainly accounted for by differences in cognitive skills as measured by these international tests.

Between 1960 and 2009, the extra-rapid growth of some countries at the top of the achievement distribution—such as Korea, Taiwan, Singapore and Hong Kong—can be readily explained by their students' very high test scores. Their growth was almost 2% per year higher than would be expected if they had only average achievement. Countries at the bottom of the achievement distribution—such as South Africa, Argentina, the Philippines and Peru—have suffered from the weak growth that their failing education systems predict. Their growth was almost 2% less per year than would be expected had their student test scores put them at the world average.

The U.S. economy grew two-thirds of a percent faster per year for this period than would be predicted by its students' mediocre test scores. This performance reflects a number of historic advantages. The U.S. economy is built on open markets, secure property rights and generally favorable tax rates; a higher-education system at the top of the world; and favorable immigration policies that permitted highly skilled people to enter. But these relative advantages are declining as other countries emulate our institutions and practices.

In the future, U.S. growth will depend on the skills of its citizens, and currently those skills are not competitive with other countries. This nation can no longer expect to grow by retaining talent attracted to colleges and universities from abroad, as other nations are offering foreign students much broader opportunities and U.S. immigration policies are becoming more uncertain.

Assuming that historic trends in all 50 countries in our analysis apply equally to the United States, its GDP growth rate would be boosted by about three-fourths of 1% a year if student test scores in math rose by 40 points higher on international tests, to the level attained by Canadian students. Three-quarters of a percent a year seems small, but it generates an amount five times our current GDP of \$16 trillion.

To get a sense of the magnitude of these numbers, consider that the Congressional Budget Office estimated that \$4 trillion of potential GDP was lost between 2008 and 2012 as a result of the recent recession. That's a big-time number but only a hint of the long-term price of nearly \$80 trillion the country pays for a low-performing educational system.

How can U.S. student achievement be boosted? Notably, the average number of years students are in school has little impact on economic growth, once student test-score performance is taken into account. If you aren't learning anything at your desk, it doesn't matter how long you sit there.

Nor is more money the answer. The U.S. spends on average \$12,000 per pupil in grades K-12, one of the highest amounts in the world. Among U. S. states, increments in spending per pupil between 1990 and 2010 show no correlation with changes in student performance.

In Wyoming and New York, spending levels per pupil climbed at one of the fastest rates without getting any extra gains in student achievement over this time period. Florida was among the most rapidly improving states, even though inflation-adjusted state expenditures per pupil hardly changed. It matters more how the money is spent than how much is spent. Expensive but ineffective policies such as class size reduction, while valued by current school personnel, have not raised achievement. Better accountability, more school choice, market-based teacher compensation and retention policies can on the other hand boost achievement without adding materially to school costs.

Nationwide, the biggest economic gains will come many years after school improvement takes place, a fact that probably helps to explain the reluctance of the political class to commit itself to genuine school reform. Confronting the power of teacher unions and other vested interests is politically costly. But the failure to improve the education system is more costly still.

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