

The Reform Dividend

Improvements in student performance dramatically increase a country's economic growth.

By Eric A. Hanushek

Just as most parents believe, economists have clearly shown that a student's achievement in school directly affects his or her earnings later in life, after allowing for differences in the quantity of schooling, experience in the labour force, and a variety of other factors that also influence earnings.

Students who do well in school also tend to go on for further schooling, which provides an additional boost to their earnings. The economic benefits of a college education have risen dramatically during the past quarter century, and substantial evidence shows that students with good marks tend to pursue more education.

No less important is the relationship between the quality of the labour force and economic growth. Economic growth rates determine how much improvement will occur in society's overall standard of living. Moreover, the education of each individual has the possibility of making others better off (in addition to the increased earnings the individual receives).

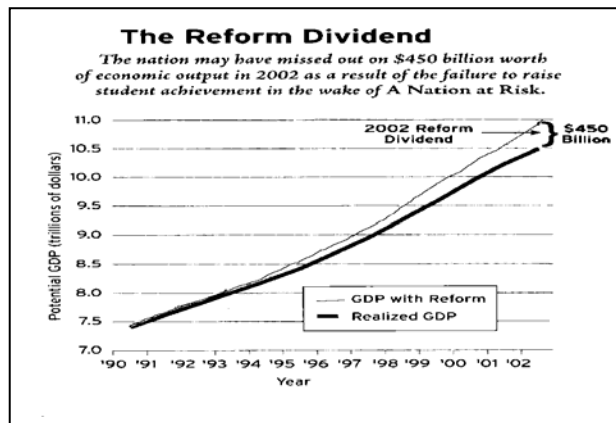
For example, a more educated society may have higher rates of invention; may make everyone more productive by virtue of the fact that firms are better able to introduce new, more sophisticated production methods; and may lead to the more rapid introduction of new technologies.

Recent work in which Dennis Kimko and I have engaged has looked closely at the size of the impact of labour force quality on the economic growth of countries.

Our study has drawn on the mathematics and science performance of students in many countries during the past four decades. In making our estimates, we take into account differences between countries in their level of income, the average number of years students are in school, and population growth rates.

We find that a difference of one standard deviation in test performance is related to a 1% difference in annual growth rates of per-capita gross domestic product (GDP). This suggests that school quality has a great impact on economic productivity and growth.

To some, 1% may not appear to be a large number. But a 1% increase each year in the growth rate of a country soon compounds to a very large number.



Consider the United States at the beginning of the 21st century, for example. In the year 2000, GDP per capita was \$34,905. An annual growth rate of 1% raises average income to no less than \$57,480 in 2050 — more than a 50% increase over the period. Quite simply, small differences in growth rates have huge implications for the income and wealth of a society.

If education has such a dramatic impact on a country's economic productivity and growth, what are the implications of a less-than-adequate education system for economic growth today and in the future?

Consider a hypothetical scenario in which schools had instituted truly effective reform in math and science instruction in 1983. If these reforms translated into achievement gains of 0.12 standard deviations a year for the

remainder of the decade, with performance constant thereafter, scores of graduates would be one standard deviation higher going into the 1990s and the future. This would have required a Herculean effort, but was within the bounds of expectations.

Such a path of improvement would not have had an immediately-discernible effect on the economy, because new graduates are always a small portion of the labour force. However, the impact would mount over time, as shown by the graph.

If past relationships between quality and growth held, GDP in the United States would have been more than 4% higher than was realized in 2002. With close to a \$10.5 trillion economy, the unrealized gain for 2002 alone would have amounted to \$450 billion, or more than the nation's total annual expenditure on K-12 public education.

The question is how to create policies that boost achievement and thus economic growth. It would be easy, if we could improve quality simply by spending more or by reducing class size. But, unfortunately, the evidence shows that more school resources and smaller classes do not have much of an effect on how much a student learns in school, as measured by tests of achievement.

We need to look for ways other than mere increases in expenditure or reductions in class size if we are going to enhance the quality of our education system. What students learn in school impacts their earnings later in life, their productivity in the work force and, ultimately, their country's rate of growth.

Over time, the cumulative impact of a high-quality education system can be dramatic.

(Adapted with permission from "Lost Opportunity" in Education Next, Spring 2003. Dr. Hanushek is a senior fellow at the Hoover Institution, Stanford University.)