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Education Spending Versus Achievement Data

by [Neal Levene](#) on Wednesday, September 16, 2009 · [5 comments](#)

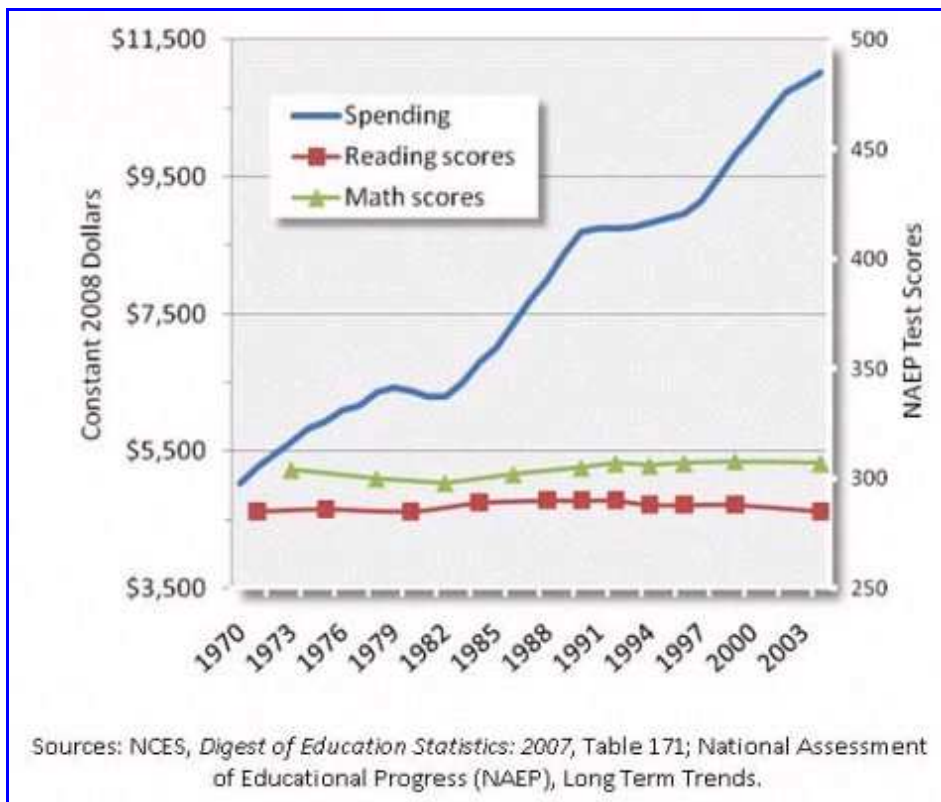
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There is an interesting article over at [Carpe Diem](#), Mark J. Perry's Blog.



Since 1970, inflation adjusted public school spending has [more than doubled](#). Over the same period, achievement of students at the end of high school [has stagnated](#) according to the Department of Education's own long term National Assessment of Educational Progress (see chart above). Meanwhile, the [high school graduation rate has declined](#) by 4 or 5%, according to Nobel laureate economist James Heckman.

Here is an example of compelling data, reasonably presented, and with sources well documented.

Take a look at the source data from the Department of Education. From the Executive Summary of the Department of Education's study, [The Nation's Report Card: Trends in Academic Progress in Reading and Mathematics 2008](#):

Executive Summary

- Improvements seen in reading and mathematics

The following evidence is then presented. I question whether the term improvements tells the correct story. I think this is a case where looking at the percentage increase or decrease would show a virtual flat line (see bottom of post). The raw data virtually shows that story.

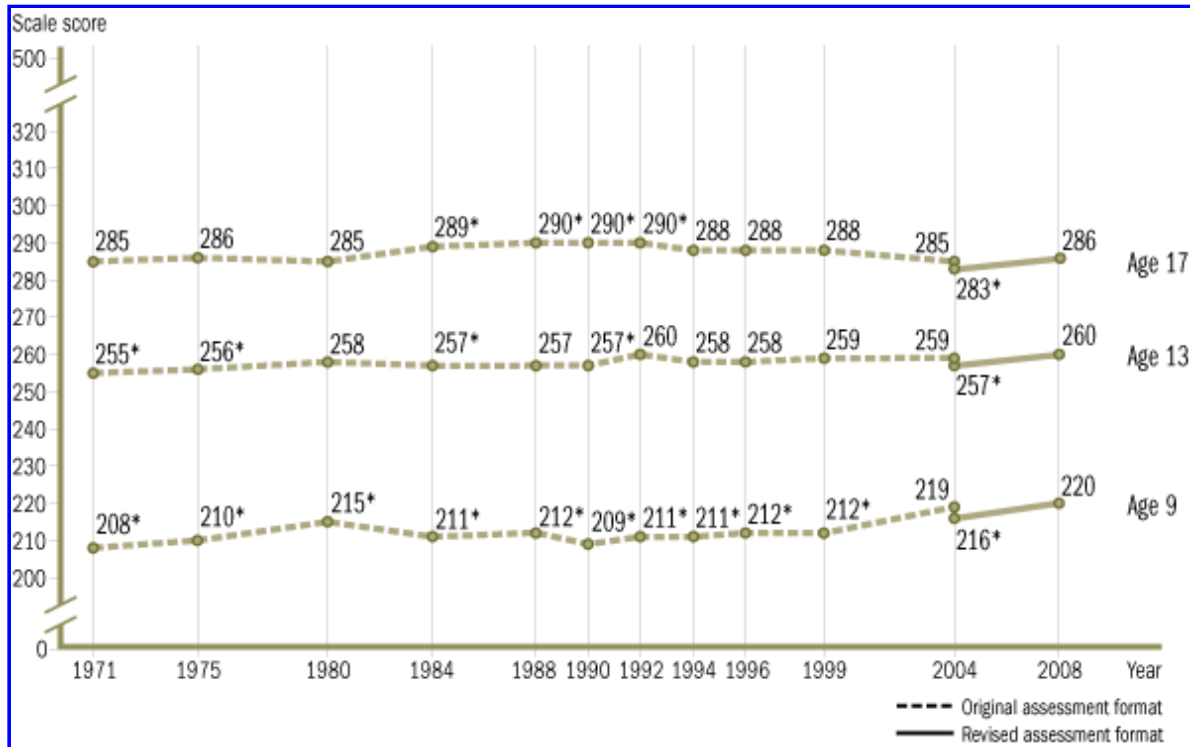
Improvements seen in reading and mathematics

Reading

In reading, average scores increased at all three ages since 2004. Average scores were 12 points higher than in 1971 for 9-year-olds and 4 points¹ higher for 13-year-olds. The average reading score for 17-year-olds was not significantly different from that in 1971.

¹The score-point change is based on the difference between unrounded scores as opposed to the rounded scores shown in the figure.

Trend in NAEP reading average scores for 9-, 13-, and 17-year-old students



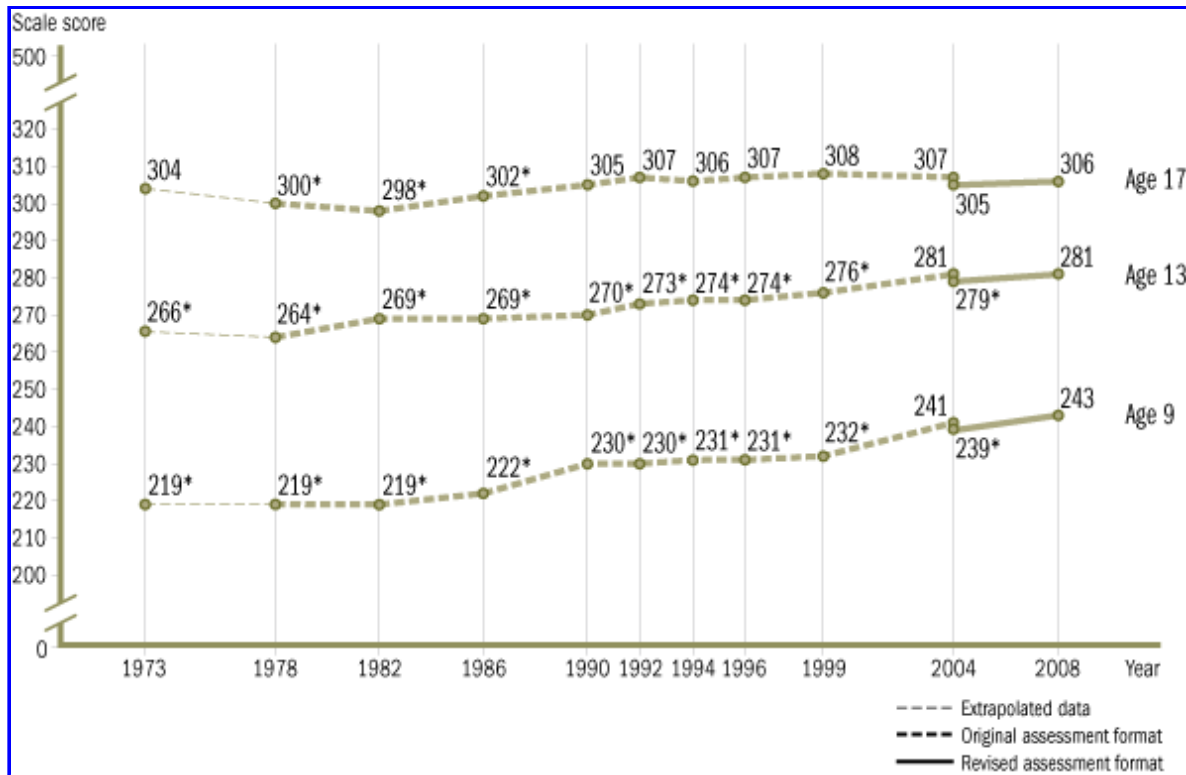
* Significantly different ($p < .05$) from 2008.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1971–2008 Long-Term Trend Reading Assessments.

Mathematics

In mathematics, average scores for 9- and 13-year-olds increased since 2004, while the average score for 17-year-olds did not change significantly. Average scores were 24 points higher than in 1973 for 9-year-olds and 15 points higher for 13-year-olds. The average mathematics score for 17-year-olds was not significantly different from that in 1973.

Trend in NAEP mathematics average scores for 9-, 13-, and 17-year-old students

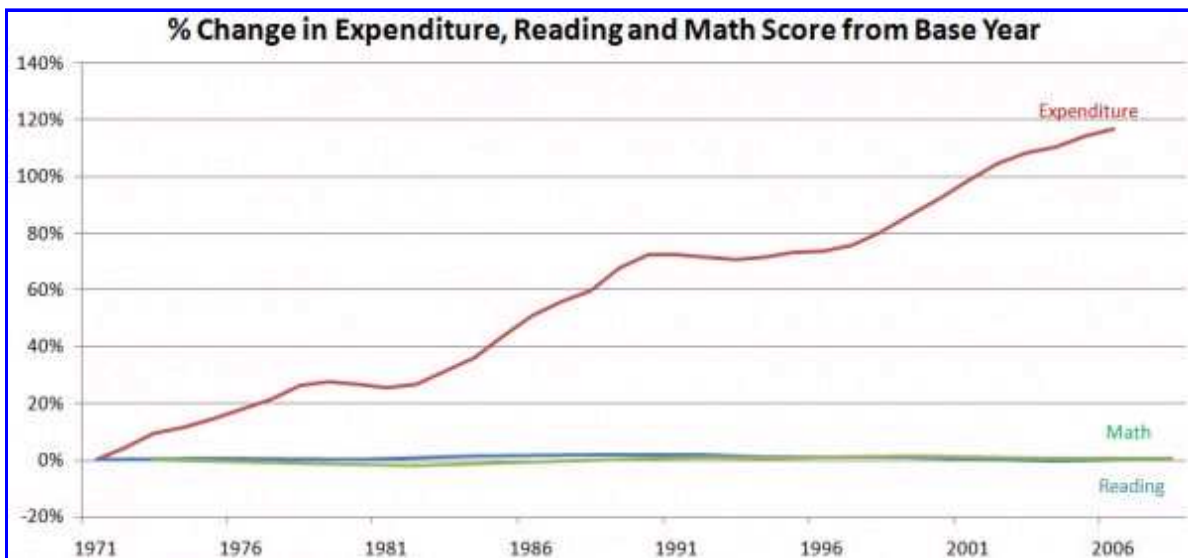


* Significantly different ($p < .05$) from 2008.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1973–2008 Long-Term Trend Mathematics Assessments.

Very disturbing information. I think the visualizations are all quite good.

I re-graphed the data showing the percentage growth in expenditures and the growth (non-growth) of academic scores (only the values for 17-year olds). I see a small advantage to placing all the values on the same scale. It accentuates the almost unbelievable consistency of the math and reading scores – no change over 30 years. I would expect more variability than occurred.



The original article concludes: “*So the only thing higher public school spending has accomplished is to raise taxes by about \$300 billion annually, without improving outcomes.*”

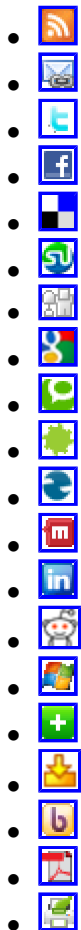
I think a more accurate story is that it took more than twice as much money in constant dollars to obtain the same result. If less had been spent would results have declined? If spending had doubled, would results have gone up? We don't know from this data.

I think another important missing piece here is the lack of target data. What was the expected level of performance increase based on spending? Was there a target? What is the expected economic value of the better performance?

I think to claim an increase in test results, like the Government did, is as inaccurate as to claim that the money was wasted, as the Cato's Center for Educational Freedom did.

It is important to distinguish between the statistics and the interpretation of those statistics.

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