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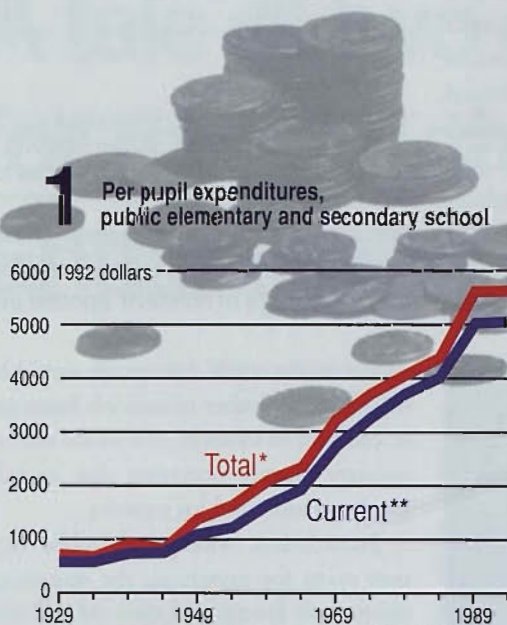
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Graphically speaking

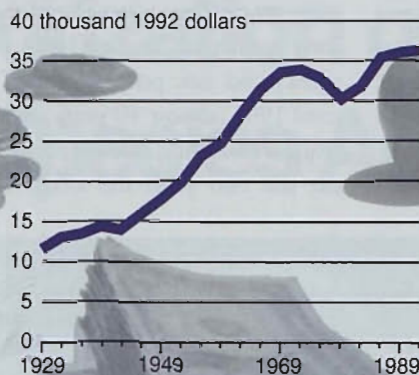
Public education



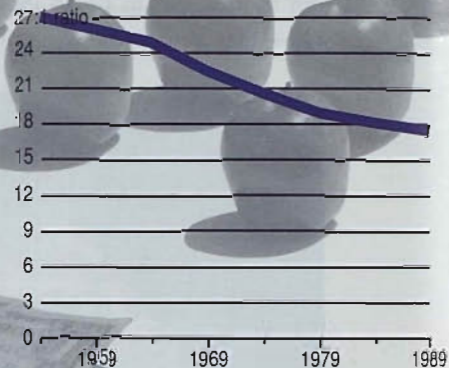
* Total expenditures include all per pupil expenditures for school operation.

** Current expenditures include all per pupil costs except capital outlays and debt service.

2 Estimated average annual salary of instructional staff



3 Public elementary and secondary schools' pupil/teacher* ratios



* Ratio based on full-time equivalent number of classroom teachers

In the information age, an educated workforce is a critical need of the U.S. economy. Despite this need, more than 10 percent of the U.S. population does not finish high school. Less than half of those who do, do not pursue post-secondary education. As studies report U.S. students' declining performance in international achievement competitions, public concern is voiced about continued and increasing expenditure on public schools.

Inputs

School spending (adjusted for inflation) has increased throughout the 20th century.

- Total public spending per pupil is up from \$725 in 1929 to \$5,257 in 1992, and has doubled in the last 25 years (figure 1).

- Teacher salaries have increased from \$11,466 in 1929 to \$35,905 in 1991 (figure 2). Adjusted for inflation, teacher salaries increased by 20 percent during the 1980s, the decade of school reform (figure 2).

- The pupil/teacher ratio has been reduced dramatically during the past 40 years, down to 17 students per teacher (figure 3).

- Per pupil funding growth has been fueled by a shift from local to state funding for primary and secondary education (figure 4). This graph shows the national statistics; however, there is wide variation across states; Hawaii with 87 percent state funding, to New Hampshire with 89 percent local funding.

Output

Funding growth and decreases in the pupil/teacher ratio are associated with little or no improvement in student outcome measures.

- Scores for scholastic aptitude tests for college-bound seniors (SAT) have had a downward trend over the past 25 years (figure 5).

- School dropout rates (figure 6) for the most part have shown only slight improvement over the last decade. The percentage of dropouts for all persons aged 16 through 24 fell only two percentage points, from 15 per-

cent in 1972 to 13 percent in 1991. There was dramatic improvement in the rate for black, non-Hispanic students, which declined from 22 percent to 14 percent; the rate for white, non-Hispanic persons declined from 12 percent to 9 percent; but the dropout rate for Hispanics has remained close to 35 percent over the past two decades.

The puzzle

Despite increases in school funding and lower pupil/teacher ratios, student performance as measured by achievement test scores and dropout rates has worsened or shown only slight improvement. Research provides little insight into the issue. Smaller class size, graduate training for teachers, teacher experience, and higher teacher salaries do not appear to be systematically associated with improved student performance on standardized achievement tests (Hanushek).

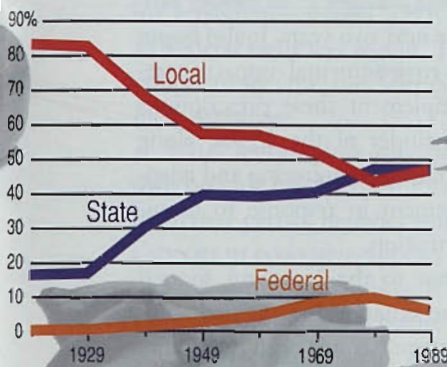
What are explanations for poor student performance, despite increased public invest-

Investment

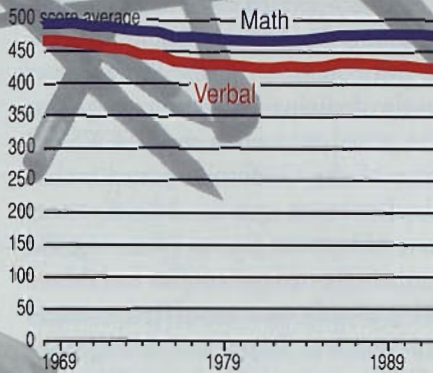
and performance

by Kevin T. McNamara and Bob F. Jones

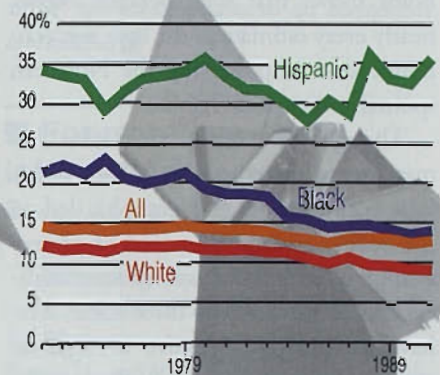
4 Total public elementary and secondary school revenues by source



5 Scholastic aptitude test score averages for college bound seniors



6 Percentage high school dropouts among persons 16-24 yrs. old by race



Source for all graphs: Digest of Education Statistics, 1992

ment in education? One might be that the performance measures are not appropriate measures of school outcomes. In 1990, 42 percent of all high school students took the SAT exam. Thus a measure of the cognitive skills of less than 50 percent of high school students in their final year of school may not provide a representative performance measure. Test bias, shifts in the population taking the SAT, and the interaction of school, home, and community support in the learning process raise concerns about comparisons of SAT scores across time, and as a criterion for school evaluations.

The dropout rate may not be an appropriate performance measure either. Household and community factors may impact dropout rates independent of school resources. Evaluation of schools' success independent of these non-school factors might lead to incorrect conclusions about schools' effectiveness.

Part of the problem may be that schools are not efficient. Use of average salary and

average pupil/teacher ratios as an input measure assumes school administrators can allocate salary money and teachers to encourage teacher and student productivity. Teacher contracts and state mandates, however, often influence or control these decisions.

Social changes over the last two decades also impact the education process. There have been dramatic increases in both dual income and single parent households. As a result, parents have less time and energy to work with and supervise their children. The result may be that more student time is allocated to television, recreation and work, rather than reading and studying. Schools also are influenced by these social changes. Teachers' expectations for pupil performance may change. School resources may be shifted to other services, such as security, after school day care, and meal programs. ■

For more information

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Hanushek, Eric A. "The Economics of Schooling: Production and Efficiency in Public Schools." *Journal of Economic Literature*, 24(3):1141-1177, 1986.

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