THE KNOWLEDGE CAPITAL OF NATIONS: A GLOBAL VIEW OF THE AMERICAN SCHOOL

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Federal Reserve Bank of Philadelphia
Key Questions

1. Does achievement matter?
   YES

2. Is the U.S. competitive?
   NO

3. How is Pennsylvania doing?
   NOT SO WELL

4. Are there things to be done?
   YES
Commitment to Achievement Growth

• Nation at Risk (1983)
  • Stem a rising tide of mediocrity.

• George H. W. Bush and all Governors (1989)
  • Bring U. S. achievement up to top of world by 2000.

• Clinton: Goals 2000:
  • “All Americans can reach international competitive standards.”

• Bush: No Child Left Behind
  • “All students proficient by 2013”

• Obama: State of the Union 2011
  • “We know what it takes to compete for the jobs and industries of our time. We need to out-innovate, out-educate, and out-build the rest of the world.”
Importance to the United States

“Human capital will determine power in the current century, and the failure to produce that capital will undermine America’s security.”

— Independent Task Force Report, Condoleezza Rice, co-chair, Council on Foreign Relations
Cognitive Skills and Economic Growth

 coef = 1.980, se = 0.217, t = 9.12
Years of Schooling and Economic Growth

Without quality control

With quality control
“First in the World by 2000”

The graph illustrates the percent additions to GDP over a period from 1989 to 2064. It shows the trends for 10-year reform, 20-year reform, and total U.S. K-12 spending. The goal is to achieve success by 2000 and 2010, with a focus on increasing investments in education to improve outcomes.
PISA Mathematics, 2009
Importance to United States

• Value of higher skills
  • Germany, Canada, Finland
  • No Child Left Behind
## Economic Value of Improvement

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<tr>
<th>Being Germany</th>
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Pennsylvania in U.S. Perspective

- High variation in **GDP per capita growth** across states
  - US average annual GDP per capita growth rate 1970-2007: 2.18%
  - Pennsylvania grew by 2%
    - 14th slowest growth 1970-2007
What Can Be Done?

1. Improve teacher quality
2. Improve teacher quality
3. Improve teacher quality
Teacher Quality: The Big Picture

- Good teachers are essential to improved schools
  BUT
- Too hard to change so we will stay with current policies

*Very different economic futures based on today’s actions*

- Total focus on current problems
- Ignoring long run means constant future problems
Teacher Impact through Individual Earnings
Impact on Student Lifetime Incomes by Class Size
(compared to average teacher)

- $1,000,000
- $500,000
- $0
- $500,000
- $1,000,000

90th percentile teacher
75th percentile teacher
60th percentile teacher

Students Taught
Impact on Student Lifetime Incomes by Class Size
(compared to average teacher)

$1,000,000

$500,000

$0

$430,275

90th percentile teacher

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Students Taught

90th percentile teacher
75th percentile teacher
60th percentile teacher
40th percentile teacher
25th percentile teacher
10th percentile teacher

-$801,555
Teacher Quality

- No identifiable characteristics
  - Master’s degrees
  - Experience*
  - Certification
  - Preparation
  - Professional development
- Observable through both student performance and supervisor ratings
- Cannot regulate and pay on characteristics
Align Pay and Performance

- Evaluation
- Reward success
- Zero option
Estimates of Least Effective Teachers on Student Achievement

s.d. performance gain

Percent deselected

low estimate of teacher effectiveness
Estimates of Least Effective Teachers on Student Achievement

Canada

low estimate of teacher effectiveness
Estimates of Least Effective Teachers on Student Achievement

- High estimate of teacher effectiveness
- Low estimate of teacher effectiveness

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Finland
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NAEP 8th Grade Mathematics, 2011
Pennsylvania and the Nation
Increments in Expenditures and Gains in Student Achievement
1990-2008

Test-score gains between 1992 and 2011

Increase in Expenditures, 1990-2009 (2009 Dollars)*
LIFO (Last in, first out)

- Commonly used reverse seniority
- Vergara v. California case
- Simulations of alternatives
LIFO v. Effectiveness

Source: Boyd, Lankford, Loeb, and Wykoff (2011)
Washington, DC teacher policies

- **IMPACT**
  - Value-added + observations
  - Bonuses to 1000
  - Firing 400

- **Research component**
  - Multiple measures
  - Two years
  - Minimum number of students for value-added

- **Dee and Wyckoff (2013)**
  - Regression discontinuity
  - Bottom: +11 percent voluntary attrition; +0.27 s.d. for stayers
  - Top: sizable achievement response (effect size=0.24)

- **Largest state gains in NAEP in 2013**