Looking Inside the Black Box of Schools: Classrooms, Teachers, and School Leaders
Welcome

Jeff Manza
IPR Acting Director and Faculty Fellow,
Associate Professor of Sociology

The Institute for Policy Research at Northwestern University
Introduction

Therese McGuire
IPR Faculty Fellow,
Professor of Strategy and Management,
Kellogg School of Management
Presentations

“Does Class Size Matter?”
by Spyros Konstantopoulos

“Do Teachers Matter? Examining the Role Teachers Play in Student Performance”
by Kim Rueben

“Does School Leadership Make a Difference?”
by James P. Spillane
Does Class Size Matter?

Spyros Konstantopoulos
School of Education and Social Policy and the Institute for Policy Research
Northwestern University
E-mail: spyros@northwestern.edu
Allocation of Resources in Education: Class Size

• Fundamental Allocation Decisions Involve Class Size
• Manipulation of Class Size Is a Popular Policy for School Improvement
• Do Our Students Benefit from Smaller Classes?
• Does Small-Class Membership Boost Student Achievement?
Findings from Previous Small-Scale Studies

• Overall Class-Size Reduction Affects Student Achievement Positively (Especially in Early Grades)
Findings from Previous Large Scale Studies/Surveys

• The Evidence is Mixed:
  – Some Studies Point to Small or Trivial Positive Effects of Small Classes on Student Achievement
  – Other Studies Suggest Larger Positive Effects of Small Classes on Student Achievement
Evidence from a Large Scale Experiment: Project STAR

- The Tennessee Class-Size Experiment: Students and Teachers Were Randomly Assigned to Small or Regular Classes (Grades K to 3)
- There is Strong Evidence that Students in Small Classes Have Higher Achievement than Students in Regular Classes
Immediate Achievement Gains for Students in Small Classes in Early Grades

- Students in Small Classes Have Higher Reading and Mathematics Achievement than Students in Regular Classes in Grades K to 3
Figure 1. Small-Class Effect in Grades K to 3: Reading
Figure 2. Small-Class Effect in Grades K to 3: Mathematics
Lasting Benefits for Students in Small Classes in Early Grades

- The Positive Effects of Class Size Are Evident in Middle School and High School
- Students Who Were in Small Classes in Early Grades Are More Likely to Take ACT or SAT College Entrance Exams
- Students Who Were in Small Classes in Early Grades Also Have Higher ACT Scores
Figure 3. Small-Class Effect in Grades 4 to 8: Reading
Figure 4. Small-Class Effect in Grades 4 to 8: Mathematics
Do Minority Students Benefit More Academically from Small Classes?

- The Positive Small-Class Effect is Somewhat More Prominent for Minority Students in Early Grades
- The Positive Small-Class Effect is More Prominent for Minority Students in Middle School and High School
- The Positive Small-Class Effect is More Prominent for Minority Students in ACT Scores
Figure 5. Small-Class Effect for Minority Students in Grades K to 3: Reading
Figure 6. Small-Class Effect for Minority Students in Grades K to 3: Mathematics
Figure 7. Small-Class Effect for Minority Students in Grades 4 to 8: Reading
Figure 8. Small-Class Effect for Minority Students in Grades 4 to 8: Mathematics
Class-Size Reduction May Be an Effective Intervention, But Is It Cost Effective?

- Cost Benefit Analysis Using Project STAR Suggests Reasonable Economic Rates of Return
- The Minimum Achievement Gain for the Benefit of Reducing Class Size in Early Grades Is About 1/10 of a Standard Deviation
- Student Achievement Gains from Being in Small Classes are Typically Larger than this Critical Value
The Mechanism: What’s in the Black Box?

- We Don’t Have Evidence About What’s Happening (the Dynamics) in Small Classrooms
- Educated Guesses:
  - More Teacher/Student Interactions
  - More Personal Attention or Individualized Instruction
  - Use of Different, More Effective Strategies
  - Less Time on Management, More on Instruction
  - Students May Be More Comfortable Asking Questions or Participating in Class Discussions
  - Students May Work Harder or Be More Engaged in Learning
Summary of Evidence

- Class-Size Reduction in Early Grades May Be an Effective Intervention for School Improvement
- Class Size Reduction May Help Reduce the Race/Ethnic Achievement Gap
- Class Size Reduction May Be Cost Effective
Future Work

• We Need Studies to Identify the Mechanism of the Small-Class Effect
Do Teachers Matter?
Examining the Role Teachers Play in Student Performance

Kim Rueben
Urban Institute
Public Policy Institute of CA
E-mail: KRueben@ui.urban.org
Outline

• Do teachers matter?
• What is it about teachers that improves student performance?
• How are good teachers distributed across schools?
• What can be done to ensure that struggling schools are staffed with highly qualified teachers?
Do Teachers Matter?

- Long literature since Coleman Report (1966) showed little effect of measurable teacher characteristics. Instead, family background is paramount.
- But, the effects of a great teacher (and a bad teacher) are well known to principals and parents.
- Discrepancy may have been due to data and design of studies.
- New state specific research with richer, longitudinal data consistently shows teachers matter.
State, District Studies Show Presence of Good Teachers Can Offset Differences in SES

• Rich student level data now available. Follows individual student performance over time.

• Value-added models (VAM) of student performance used to determine teacher quality.
  – Change in student performance linked to teachers who taught them. (10-21% of differences across students related to teacher effectiveness.)

• Results robust in states and districts with long history of accountability programs. TN, Chicago, Texas, NC, NY, CA?
Knowing Which Characteristics Lead to Effective Teachers - Still Largely Unknown

- Linking these achievement gains to teacher observable characteristics difficult.
- Chicago – 90% of quality measure not related to teacher qualifications.
- Texas – little beyond experience matters.
- New York – observable characteristics play larger role.
Teacher Characteristics Play a Larger Role in Low-SES Schools

![Chart showing the predicted percentage of students above the national median for different school characteristics.

- **SES**
- **Teacher experience**
- **Fully certified**
- **Teacher education**
- **Changing all teacher traits**

The chart uses bars to compare the predicted percentage of students above the national median for each characteristic.

- **Low SES**
- **Average SES**
- **High SES**

The chart highlights the impact of teacher characteristics on student performance, particularly in lower SES schools.
Which Observables Matter?

• Experience seems to matter
  – Learning curve with teachers improving over first 3 years.

• Teacher performance on tests
  – Mattered in NY, NC, TN and Texas in 1980s.

• Quality of undergraduate institution and major – NY
Some Characteristics Less Related, But Cost More

- Master’s Degree – mixed evidence.
- State Certification – some evidence but related to experience.
- Advance degrees and certification make the cost of entering teaching higher than entering other fields.
VAM Models Promising, But Can Have Unintended Consequences

• Persistence in teacher ranking over time
  – Can use relative change in student test scores to evaluate teachers.
  – However, can find that teachers avoid tougher assignments or avoid teaching in grades that are evaluated (North Carolina, Ladd et al).
Are High Quality Teachers Distributed Equitably? No

- Districts with higher minority, poor students have less experienced, qualified teachers.

- Problem worse within districts:
  - High poverty schools have more new teachers, not credentialed, teaching outside specialty.
  - (CA, NY)

- Problem exacerbated by:
  - Current transfer rules – transfers done by seniority.
  - Pay scales – salaries are largely based on education and experience in a district or state.
Unintended Consequences of Policies Can Worsen Distribution of Teachers

<table>
<thead>
<tr>
<th>% Free Lunch</th>
<th>% with &lt;2 Years of Experience</th>
<th>1990</th>
<th>1995</th>
<th>1997</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25</td>
<td></td>
<td>10.9</td>
<td>8.7</td>
<td>17.5</td>
<td>12.9</td>
</tr>
<tr>
<td>25-50</td>
<td></td>
<td>12.6</td>
<td>9.4</td>
<td>18.4</td>
<td>13.1</td>
</tr>
<tr>
<td>50-75</td>
<td></td>
<td>14.9</td>
<td>11.2</td>
<td>21.7</td>
<td>16.6</td>
</tr>
<tr>
<td>75-100</td>
<td></td>
<td>14.7</td>
<td>14.4</td>
<td>24.9</td>
<td>21.7</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>12.9</td>
<td>11.3</td>
<td>21.3</td>
<td>17.0</td>
</tr>
</tbody>
</table>

Distribution of New Teachers in California - PPIC
Which Policies Can Help?

• Differential wages can play some role in recruiting teachers to hard-to-staff schools. Differential wages in all schools would exacerbate in-district problems.

• Since teaching conditions also matter, attention should be paid to improving teaching environment. For example:
  – Targeted improvements in facilities
  – Mentoring
  – Targeted class size reduction

• May need to overhaul placement decisions.
Conclusions

• Good teachers matter and can offset differences in family background.
  – However, measuring what characteristics lead to high quality teachers is difficult.
  – Models should address learning curve in teaching.
  – Prior VAM of students good predictor, but only a tool.
• Significant challenge remains: teachers in high poverty schools currently least qualified.
• New policies necessary to ensure all students have access to highest quality teachers.
Does School Leadership Make a Difference?

James P. Spillane
Institute for Policy Research
Northwestern University
E-mail: j-spillane@northwestern.edu

http://www.distributedleadership.org
Overview

- Does school leadership matter?
- How does school leadership matter?
- What are the challenges in moving forward?
Does School Leadership Matter?

- Some direct, but most indirect effects on student learning.

- Small but significant effects on student learning:
  - 3 - 5% of variation in student learning across schools
  - Approximately 25% of all variation explained by school-level variables

- Effects greater in schools located in challenging circumstances.

(Hallinger and Heck, 1996a; 1996b; 1998; Leithwood, et. al, 2004)
What Matters?

- Setting Direction
- Human Development
- Organizational Development
What Matters?

- Setting Direction
- Human Development
- Organizational Development
Motivation x Knowledge x Situation

= 

Instructional Performance
Setting Direction

- Constructing, selling, and sustaining a VISION.
- Getting buy-in for organizational GOALS.
- Setting and maintaining HIGH EXPECTATIONS.
Human Development

- Monitoring instruction & progress.
- Developing teachers’ knowledge and skill, both individually and collectively.
- Providing encouragement, recognition, and support.
Organizational Development

- Adapting and modifying standard operating procedures to support instructional improvement.
- Building a culture that de-privatizes classroom practice, supports collaboration among teachers, and maintains high expectations.
- Procuring and distributing resources.
- Handling disturbances.
Who Practices Leadership?

- The persistence of the “Heroics of Leadership” Genre

- Policy environment and research community perpetuates the Heroics of Leadership Genre.

- Let’s get realistic

  “Initially, I tried to do it all. I was trying to do it all and that was impossible. You cannot be all things to all people. … I don't know everything about everything.”

  (Dr. Johnson, Kelly School)
Constructing Others as Instructional Leaders

- 83% (70) of teachers identify the principal as leader for their teaching.

- 29% (24) of teachers cite the assistant principal as influential.

- 80% cite other teachers as influential.
Leadership is distributed among administrators and teacher leaders:
- “Three to seven” formally designated leaders per elementary school.

The distribution of leadership depends on:
- Leadership Function or Routine
- School Subject
- School Type/Policy Context
- Developmental Stage
- School Size
- Role

Role and leadership distribution:
- Principals and to a lesser extent assistant principals more generalists.
- With respect to instruction, principals focus on goal setting and monitoring while other formally designated leaders focus more on capacity building.

(Camburn, Rowan, & Taylor, 2004; Spillane, Diamond, & Jita, 2003)
How Leadership Gets Distributed

- By Design - shaping objects to particular purposes.
  “There are different layers … there is some permanent structures, and that you have G____, W____, M____ R____, that are permanent structures within the school by title. I think that also at various points we have leaders that emerge for different activities and different projects, and different kinds of things like that.” (Adams’ Principal)

- By Evolution

- By Default

- By Crisis
Moving Forward: Challenges

- Getting to leadership PRACTICE.
- Treating teaching and learning as more than the DEPENDENT variable.
- Facing the leadership DEVELOPMENT challenge.
Challenge: Understanding Leadership as Practice

- An account of the HOW, not just the what of leadership.
- Develop a set of conceptual tools for studying practice.
- Distributed Perspective:
  - Beyond the actions of formally designated leaders.
  - Leadership practice function of interactions among two or more leaders, followers, & aspects of the situation.
Challenge: The Subject Matters in Leadership Practice

Language Arts Network
Kelly School

Mathematics Network
Kelly School
Challenge: Leadership Development

- Can leadership practice be learned?
- Developing leadership practice, not just leaders.
- Putting teaching and learning at the core of leadership development.
For more information, please go to:

www.northwestern.edu/ipr