Empirical evidence does NOT clearly show that more experienced teachers with higher degrees are better

By Cherise Khaund
“The difficulty from a policy perspective is that the relationship between easily measured attributes – such as a teacher’s highest degree attained or level of experience – and student outcomes is TENUOUS AT BEST” (Goldhaber, 2002)
Road Map

• Background
• Measurable student achievement attributed to teachers
• What is the definition of “better”?
• Overall studies are flawed
• Benefits of experience level off early
• Teacher education and licensing varies
• Data deficiencies
• Policy Implications
Background

• Current Policies
  – Loan forgiveness programs for shortage fields
  – Increases in beginning teacher salaries
  – “alternate routes” to certification

• Teacher Quality Initiatives
  – Higher Standards: GPA, more courses, pretest
  – More pre-entry coursework: more learned and higher status of profession

Source: Evertson, Hawley, Zlotnik
% of Teachers with Masters Degrees Doubled 1960-’90

Dollars Increased While Student Performance Remained Unchanged

Real Spending per Student Increased by more than 70% 1970-1990 even though student performance remained essentially unchanged

<table>
<thead>
<tr>
<th>School level</th>
<th>Number of estimates</th>
<th>Statistically significant</th>
<th>Statistically insignificant</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Positive</td>
<td>Negative</td>
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<tr>
<td>Elementary schools</td>
<td>136</td>
<td>13%</td>
<td>20%</td>
</tr>
<tr>
<td>Secondary schools</td>
<td>141</td>
<td>17%</td>
<td>7%</td>
</tr>
<tr>
<td>All schools</td>
<td>277</td>
<td>15%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Measurables only explain 3% of student achievement attributable to teachers

Source: Goldhaber et al. 1999
Definition of “better”

• Student test scores? Which students?
  – Greater % teachers w/ Masters → lower white student gain scores but higher black student gain scores
  – More experience → negatively associated w/ Hispanic student gain scores

• Student dropout rate?
  – School and teacher characteristics generally influence gain scores more than dropout

Source: Ehrenberg, Brewer “High School and Beyond”, p. 10
Overall Studies are Flawed

• “the research is often of dubious scientific merit and frequently fails to address the types of issues about which policy makers are most concerned”
• GAO (1984) characterizes a 1983 synthesis of research by Colin Byrne as finding “no consistent relationship between the knowledge of teachers and the achievement of their students”
• “little research exists to support the notion that making significant changes in what teachers learn before they begin their careers will significantly improve the quality of teaching experienced by most students in elementary and secondary schools”
• “investigations of teacher education do not represent a strong body of research”

Sources: Evertson, Hawley, Zlotnik; GAO 1984
Benefits of Experience
Level Off Early

- Hanushek 1986 lit review - Little evidence that experience beyond the 1st few years in the classroom makes one a better teacher

- Goldhaber – “there is some evidence that experienced teachers are more effective with students, but the benefits of additional years of experience appear to level off early in a teachers’ career”

- Darling Hammond – “other studies have found a relationship between teachers effectiveness and their years of experience, but not always a significant one or an entirely linear one”
Teacher Experience Negative or Insignificant in 71% of Studies

### TABLE 3
Percentage Distribution of Estimated Effect of Key Resources on Student Performance, Based on 377 Studies

<table>
<thead>
<tr>
<th>Resources</th>
<th>Number of estimates</th>
<th>Statistically significant</th>
<th>Statistically insignificant</th>
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</thead>
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<td>Positive</td>
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<tr>
<td>Real classroom resources</td>
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<tr>
<td>Teacher-pupil ratio</td>
<td>277</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>Teacher education</td>
<td>171</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Teacher experience</td>
<td>207</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Financial aggregates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher salary</td>
<td>119</td>
<td>20%</td>
<td>7%</td>
</tr>
<tr>
<td>Expenditure per pupil</td>
<td>163</td>
<td>27</td>
<td>7</td>
</tr>
</tbody>
</table>

*Note: Source—Author’s tabulations.*

Teacher Education & Licensing
Varies

• Darling-Hammond
  – % w/ Masters Degree = insignificant
  – % unqualified uncertified = insignificant

• Hanushek
  – Zero value added studies = positive & significant

• Goldhaber & Brewer
  – Results conclude “Teacher MA and certification have NO impact on student achievement”
Darling-Hammond: Masters or Uncertified → Not Significant

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>% Well-qualified Teachers (with full certification and a major in their field)</td>
<td>.857 (4.3)***</td>
<td>.818 (2.99)**</td>
<td>.869 (4.90)***</td>
<td>.79 (3.94)**</td>
<td>.824 (4.78)***</td>
<td>.636 (3.36)**</td>
</tr>
<tr>
<td>% with Masters Degrees</td>
<td>.075 (.59)</td>
<td>.159 (.91)</td>
<td>-.007 (-.06)</td>
<td>.157 (1.23)</td>
<td>.053 (.48)</td>
<td>.103 (.86)</td>
</tr>
<tr>
<td>% Unqualified Newly Hired Teachers (uncertified in their main assignment field)</td>
<td>.079 (.47)</td>
<td>.112 (.48)</td>
<td>-.058 (-.39)</td>
<td>-.034 (-.20)</td>
<td>-.092 (-.63)</td>
<td>-.199 (-1.2)</td>
</tr>
</tbody>
</table>
Value Added Studies: Zero showed teacher education as positive and significant


<table>
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<th>Resources</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>A. All studies</td>
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<td></td>
<td></td>
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<tr>
<td>Teacher-pupil ratio</td>
<td>78</td>
<td>12%</td>
<td>8%</td>
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<tr>
<td>Teacher education</td>
<td>40</td>
<td>0</td>
<td>10%</td>
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<tr>
<td>Teacher experience</td>
<td>61</td>
<td>36%</td>
<td>2%</td>
</tr>
<tr>
<td>Teacher test score</td>
<td>11</td>
<td>27%</td>
<td>9%</td>
</tr>
<tr>
<td>B. Studies within a single state</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-pupil ratio</td>
<td>23</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Teacher education</td>
<td>33</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Teacher experience</td>
<td>36</td>
<td>39%</td>
<td>3%</td>
</tr>
<tr>
<td>Teacher test score</td>
<td>9</td>
<td>22%</td>
<td>11%</td>
</tr>
</tbody>
</table>
BA or MA in Math $\Rightarrow$ positive
Non-math MA $\Rightarrow$ NO impact

Data Deficiencies

• General teacher degree-level and experience studies
  – Ignore college quality
  – Ignore when degree granted
  – Ignore what major

• Aggregation of data ignores considerable variance within a school
  – Mean years of experience
  – Mean teachers salary
  – % of teachers with Masters degree

• Aggregated analyses lack detailed family background measurements in value-added form → overstate true effects

Source: Goldhaber & Brewer, NELS, 1997; Hanushek 1997, p. 148
Data Deficiencies

• Teacher Certification
  – Professionally certified teacher requirements differ from state to state
  – Don’t control for possible difference in intelligence or academic competence of teachers
    • E.g. Cornett (1984) found regularly certified substantially more competent that teachers with less professional training. BUT – they were also more experienced in the classroom
Data Deficiencies

• Darling-Hammond
  – 11 of 13 studies found regular certified teachers more effective than provisional or emergency credentialed BUT
    • Only 4 of those studies were based on student outcomes, and most predate “value added” methodology
  – “It is possible that this variable captures other features of the state policy environment, including general investment in education, and how rigorous and enforced standards are” p. 25
  – Omitted: parent education levels, school and district size, cost of living differentials, other policies like local freedom from regulations
Achievement Gap – Special Cases

Ferguson – shows case studies of how teacher attitudes can affect student achievement, but he concedes:

“more research is needed on how professional development programs affect both test scores and the black/white test score gap”
Clear and Consistent Should Not be Hard to Detect

“Most studies find effects of teacher training are small and specific to certain contexts. If a large, consistent association between teacher training and student achievement existed, it probably would not be all that hard to detect” — Goldhaber 2002 Mystery of Good Teaching
“What actually takes place in the classroom may not be captured by teacher characteristics alone”

- Murnane & Phillips, 1981
Policy Implications – Require more experience or degrees?

- Proposals to increase preservice teacher training to 5 or 6 years
  - “because of earnings forgone, as well as tuition and other costs, requiring an additional year of college could DOUBLE the costs of becoming a teacher”

- Therefore, why require higher degrees if we can’t CLEARLY show they make teachers better?

- Can limited $ be spent more effectively somewhere else? Teacher salaries, class size, specific training, vouchers, accountability sanctions and rewards?

Source: Evertson, Hawley, Zlotnik