Para teachers delivering supplementary lessons in rural primary schools
Evidence on impact and generalizability from a cluster randomized controlled trial in the Gambia

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Motivation

• Great progress raising basic learning levels in developing countries over last 50 years (on average)

• Literacy/numeracy levels remain very low in pockets of extreme poverty in these countries

• Known constraints:
  ▶ **Supply-side:** extreme poverty; suboptimal teacher effort (management, recruitment) or training; school resources
  ▶ **Demand-side:** potentially bad information about returns, credit market failures, cultural pressures (gender preferences, rotten kin theorem, ...)
This paper

• **Research question:** how to get the large gains that people like Lant call for to these hard-to-serve areas?

• **Implementation:** run RCT in rural Gambia evaluating an intervention for primary school-aged children

  ▶ Intervention combines three levers known to be effective

    - Para teachers delivering *after-school classes*
    - *Scripted lessons*
    - *Frequent monitoring / coaching*

  ▶ Attempt to generalize successful intervention in India (Lakshminarayana, Eble, et al. 2013) to new context
Main results

- **Dramatic** difference in scores: intervention villages scored 46 percentage points (3.2 SD) better than control villages
  - Large differences across all levels of skill spectrum

- We think this is driven by
  - The *nature of our intervention*
  - Low levels of learning in control villages

- **Policy take-aways**
  - Proof of concept: *can* achieve this kind of gain
  - Importance of supply side
Previous work

- **Para teacher interventions**: Banerjee, Cole, et al. 2007; Muralidharan and Sundararaman 2013; Duflo, Dupas, and Kremer 2015; many others


- **Raising education levels in developing countries**: many meta-analyses, e.g., Glewwe 2002, Kremer and Holla 2009; McEwan 2015; Murnane and Ganimian 2016; others

- **Our contribution**:

  *Study the generalizability of an intervention that holds great promise in solving a sticky problem*
The original study - Lakshminarayana, Eble, et al. PLoS ONE 2013

- RCT conducted in 214 small villages in Telangana, India
- Hired para teachers to deliver after-school lessons to 2nd-4th graders for two years
  - Intervention designed by Naandi Foundation, an Indian NGO
  - Had been implemented for several years prior to study
- Main results: gain of 0.75 SD overall for intervention children
Where we chose to work - The Gambia
The Gambia

Where we worked
Broad research design

• Inclusion criteria:

  ▶ Villages: 10-300 households; >= 10 eligible children

  ▶ Children: 6-8 years old at baseline; plans to send to first grade, for the first time, in Fall 2015

• Randomized by cluster of villages to prevent control uptake

• Primary outcome: child’s composite score on reading and math tests at end of trial

  ▶ No baseline test: early fieldwork → few nonzero scores
Timeline

- January-October 2015 - enumeration
- January 2016 - intervention begins
- Data collection throughout (attendance, enrollment, indicators of economic activity)
- Early May 2018 - intervention ends
- Mid-May 2018 - early June 2018 - endline testing
Intervention

- **Para teachers**: untrained teachers to run after-school classes
  - From village or nearby, passes aptitude exam

- **Curriculum**: scripted lessons with paper workbooks
  - Trained at the outset + a few weeks every year + in-service

- **Monitoring**: at least once per 2-4 weeks
  - Focus on pedagogical improvement
Intervention
Intervention
Primary outcome - composite test score

- Mean of a child’s score on early grade reading and math (EGRA and EGMA) tests

- Why EGRA / EGMA?
  - Great for measuring very low levels of learning
  - Same tool used by government to evaluate teachers

- Quality control
  - Brought on testing expert to design, supervise
  - Hired new staff, Eble oversaw throughout testing period
Tests
Tests
Primary outcome - composite test score
Primary outcome - composite test score
Comparison of test score means

<table>
<thead>
<tr>
<th>Test Score (out of 100)</th>
<th>Composite</th>
<th>Reading</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>17.5</td>
<td>9.5</td>
<td>25.4</td>
</tr>
<tr>
<td>Intervention</td>
<td>63.1</td>
<td>58.3</td>
<td>67.8</td>
</tr>
</tbody>
</table>
Math tasks

- **Task 1** name these numbers: 1, 6, 72 ...
- **Task 2** which is bigger? 7 or 5, 58 or 49 ...
- **Task 3** fill in the blank: 5 10 15 _ , 28 _ 24 22 ...
- **Task 4a** simple addition: 4+2=_ , 1+3=_ ...
- **Task 4b** 2-digit addition: 14+25=_ , 38+26=_ ...
- **Task 5a** simple subtraction: 4-3=_ , 7-2=_ ...
- **Task 5b** 2-digit subtraction: 19-6=_ , 26-14=_ ...
- **Task 6** word problems read aloud
Math tasks

![Math tasks bar chart](chart.png)
Reading tasks

- Task 1 name these letters: a, t, k ...
- Task 2 letter sound discrimination: book, dog, boy; do, get, go; ...
- Task 3 non-word reading: ri, loz, yat ...
- Task 4a familiar word reading: time, the, make ...
- Task 5a read a short passage
- Task 5b answer questions on the passage
- Task 6 listen to a passage and answer questions on it
Reading tasks

Test score (out of 100)

<table>
<thead>
<tr>
<th>Task</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>14.0</td>
<td>68.5</td>
</tr>
<tr>
<td>Task 2</td>
<td>28.3</td>
<td>52.3</td>
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<tr>
<td>Task 3</td>
<td>4.9</td>
<td>51.9</td>
</tr>
<tr>
<td>Task 4</td>
<td>5.4</td>
<td>64.7</td>
</tr>
<tr>
<td>Task 5a</td>
<td>6.0</td>
<td>62.1</td>
</tr>
<tr>
<td>Task 5b</td>
<td>2.9</td>
<td>47.2</td>
</tr>
<tr>
<td>Task 6</td>
<td>5.3</td>
<td>61.5</td>
</tr>
</tbody>
</table>
Overview of other results

- No meaningful heterogeneity by child gender, remoteness of village, ethnicity

- Other child-level results:
  - Over time, intervention children more likely to be enrolled in school
  - Small differences in attendance, not always significant

- Spillovers:
  - Possible spillover to younger siblings
Big question: why are the estimates so large?

Our best guesses

- **Strengths of our intervention**
  - Monitoring with regular feedback, professional development
  - Better curriculum, teaching and learning materials, scripted lesson plans
  - All the known advantages of para teachers

- **Very low baseline**
Policy implications

• **Proof of concept:** *can* achieve large gains in hard-to-serve areas with very low baseline learning levels

• **Implementation:** outsource or in-house by government?
  
  ▶ Politically challenging for government
  ▶ Cost - $800 per child
  ▶ Will depend on context, capacity

• **Importance of the supply side** in very poor contexts
Thank you to our team