Why early grade reading?

An economist’s perspective

Luis Crouch, GPE Secretariat (lcrouch@globalpartnership.org)
Tues 28 Feb 2012, 1030 AM, All Children Reading Workshop
Kigali, Rwanda
This is how most 3rd-grade kids in Africa read

This is how most 3rd-grade kids in rich countries (OECD) read
Two key messages:

1. The situation is a major problem
2. We know how to fix it, and donors and countries are taking action
Why?

1. Now trite to say: “the task is quality”
2. But: many folks still don’t know just how bad situation is
3. Some stats on that follow
<table>
<thead>
<tr>
<th>Concept</th>
<th>Ratio of Low Income (LI) to High Income (HI) Countries*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross primary enrolment</td>
<td>0.95</td>
</tr>
<tr>
<td>Primary completion</td>
<td>0.58</td>
</tr>
<tr>
<td>Total years of school life expectancy</td>
<td>0.6 – 0.7</td>
</tr>
<tr>
<td>% correct on TIMSS, PIRLS*</td>
<td>~0.33 (20% vs 60%)</td>
</tr>
<tr>
<td>Internal equality in results distribution</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*LI have twice the internal learning inequality that HI countries have

*Data may be 2-3 years out of date

*This is an optimistic amount as it actually includes only LMI countries, no data for most LI
Of greater concern:

Median child in LI is at 5th percentile of HI

Or, 50% of children in LI countries learn at the level of the least-learning 5% in HI countries.

LI median is 2 SDs below HI median

What does even this mean???
Average child in lower-income countries*

Richer countries’ distribution

*About 2 SDs below the rich country median
Richer countries improve performance of the poorest children more: education for all.
So, the typical path of development (shown by the countries with the highest achievement) is to bring up the bottom

Following “movie” shows it most dramatically…. Notice the elimination of “worst performance” and emergence of “cognitive middle class”…
PIRLS 2006 Results

Percent of learners

Reading competency levels

South Africa
Morocco
Kuwait
Qatar
Indonesia
Iran
Slovenia
Slovak Rep.
France
Denmark
Italy

Lowest
Medium
Highest
• So we have shown that many countries are lagging in education quality.

• But why does it matter?

• Lots of reasons, can show some.
High correlation economic growth and educational quality

coef = 0.02305259, se = 0.00130272, t = 17.7
Inequality in results and inequality in earnings
Non-economic effects too... from McMahon... (2004)

Table 7
Estimates of Non-Market Education Externalities
Simulations of Outcomes Over 40 Years; Static Plus Delayed Effects

<table>
<thead>
<tr>
<th>Development Goal Affected by Education</th>
<th>Percent Change in Outcome After 40 Yrs.</th>
<th>Basis for Estimate (follows a 2% per capita increase in investment)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Lower Pop. Growth</td>
<td>0% in Africa (!), ↑ elsewhere</td>
<td>↓ fertility but ↑ health</td>
<td>Appiah and McMahon (2002: 50-1, 65-7)</td>
</tr>
<tr>
<td>3. Democratization</td>
<td>36% ↑ in Democracy (i.e. Freedom House Index up 3.7 on a scale of 8), to 6.6</td>
<td>Note: 2% of per capita GDP or $13.80 in Africa raises gross enrollment rates by about 20 percentage points</td>
<td>See also Freedom House (1999: 536)</td>
</tr>
<tr>
<td>4. Human Rights</td>
<td>4% ↑ in Human Rights, on Freedom House Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9% ↓ Property Crime</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2% rate of return</td>
<td>Less incarceration costs</td>
<td>Lochner (1999)</td>
</tr>
<tr>
<td>7. Deforestation</td>
<td>.3% ↓ Deforestation</td>
<td>These occur through indirect effects on democratization and slower population growth</td>
<td>Appiah &amp; McMahon (2002: 41, 52)</td>
</tr>
<tr>
<td>8. Water Pollution</td>
<td>5% ↓ Water Pollution</td>
<td></td>
<td>McMahon (2002: 216, 234-5)</td>
</tr>
<tr>
<td>9. Air Pollution</td>
<td>14% ↓ in Air Pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Volunteer Hours (US data)</td>
<td>Valued at .2% of Mkt. Rate (8.5% more give time)</td>
<td>More persons give time at each income level</td>
<td>NCES (1995:98)</td>
</tr>
<tr>
<td>11. Financial Giving</td>
<td>12% more give 3% +</td>
<td>Controlling for income</td>
<td>NCES (1998)</td>
</tr>
<tr>
<td>12. Reduce Inequality, &amp; Informal Knowledge Dissemination</td>
<td>8% reduction in GINI after 40 years, Higher Education can increase inequality, but also disseminate technology</td>
<td>Literacy and Equiva-locy Programs Target the poor, Higher Educa-tion grads informally disseminate technology</td>
<td>Psacharopoulos (1977), McMahon (2002), Moretti (2002)</td>
</tr>
</tbody>
</table>
So, we have “proven” that:
1. Quality is very low in developing world
2. Quality really matters

• But why early reading? Why early, Why reading? What does that have to do with quality?
Why early?

“More time to “recover” the cost via the returns

“Learning begets learning” both cognitively and emotionally

One of the few investments available with no “justice vs efficiency” tradeoff: with early skills, what’s good for growth is also good for social justice

Bad habits are cheaper to fix early (as any re-trained athlete knows)

• Comparing reading in grade 1 to 4

• Or, take it to the limit: good socialization versus prison
Do these sorts of results hold in developing countries?

Factors predicting permanence in school, in multivariate model (all factors controlling for each other – Senegal example)

Controlling for all other factors, the child’s results in 2nd grade was the best predictor of the completion rate.

In other words: if children doing badly by end of grade 2, other things you can do (more inputs, better infra, good teachers) has a hard time coping with early disadvantage.
Why early?

Also a good bit of evidence of various sorts of “Matthew effects”

Namely, cumulative effects of learning

There are many such studies and graphs
Why early? Matthew Effect in reading

Data from the US

Children below a certain level by the end of Grade 1, stay behind forever, and the gap widens.

And, if they cannot read, they fall behind in everything else.

Grade in years and months (thus 1. is 6 months into Grade 1)
This persists into secondary and even university…

Post-secondary participation rates by reading proficiency level at age 15

probability of entering university

![Bar chart showing the probability of entering university by reading proficiency level at age 15. The chart indicates that the probability increases as reading proficiency level increases from Level 1 or below to Level 5.](chart.png)
Why early reading?

• Many, many reasons
• Will do math, life skills at the right time
• Not “the only thing that matters” but…
  1. It is the most important “symbolic processing” skill – kids then learn that math is also a code to be cracked
  2. It lays the foundation – no independent learning without reading
  3. It can be improved now, “we” know how
  4. It can be a “case in point” for overall management of learning outcomes
So what will GPE do?
GPE pledge: content

“cut in **half** the number of non-readers in at least **20 countries** over the next **five** years”
GPE pledge: some context

- USAID: improve reading for 100,000,000 children
- Brookings’ GCL: try to get a learning outcome goal in to EFA/MDG post 2015 goal architecture
- UIS OLO: induce universal measurement of literacy
- Reading (and numeracy) in early grades has become a central point in DfID and AUSAID results frameworks (will become?)
- Countries also beginning to pledge
Delivering on the pledge: institutional, instructional, assessment

1. GPE Secretariat: not implementing agency
2. Can motivate, cajole, etc.
3. In charge: countries with support of donors
4. Not yet 100% clear who is doing what
   - USAID: big goal, bilateral implement., somewhat (a lot?) projectized
   - Others? AUSAID, DfID, multilaterals as they come in: also big goals in reading
   - How will support be programmed jointly: will sort this out
   - Part of workshop is to discuss this, in your action plans
Is there evidence that these goals can be met? And how?

Increasingly

Fairly rigorous trials: large scale, randomized assignment, pre- and post-test

Some follow
### Case study: Egypt, 2 years (complex script)

**Timed Passage Reading**

<table>
<thead>
<tr>
<th>Correct Words Read in 1 Minute</th>
<th>GILO Schools</th>
<th>Control Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>2011</td>
<td>2009</td>
</tr>
<tr>
<td>45+ Correct Words</td>
<td>4.7%</td>
<td>19.7%</td>
</tr>
<tr>
<td>21-44 Correct Words</td>
<td>15.1%</td>
<td>21.1%</td>
</tr>
<tr>
<td>1-20 Correct Words</td>
<td>35.8%</td>
<td>38.5%</td>
</tr>
<tr>
<td>NO Correct Words (1st Line)</td>
<td>44.4%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Mean Number of Correct Words</td>
<td>11.08</td>
<td>21.14</td>
</tr>
</tbody>
</table>

Halved non-readers in 2 years, inc fluent by **300%**
This is the **GAIN**!

If the gain was 16.79, and the endline was 19.18, it means at base the kids were reading 3 words. So, 500% improvement!
### Table 7. Mean performance in Zambian languages for Grade 1

<table>
<thead>
<tr>
<th>Province</th>
<th>1999</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>2.2</td>
<td>12.1</td>
</tr>
<tr>
<td>Copper</td>
<td>1.7</td>
<td>19.7</td>
</tr>
<tr>
<td>Eastern</td>
<td>1.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Lusaka</td>
<td>1.7</td>
<td>17.7</td>
</tr>
<tr>
<td>Lusaka</td>
<td>2.7</td>
<td>24.1</td>
</tr>
<tr>
<td>Northwestern</td>
<td>3.8</td>
<td>15.4</td>
</tr>
<tr>
<td>Southern</td>
<td>3.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Southern</td>
<td>0.8</td>
<td>7.2</td>
</tr>
<tr>
<td>Western</td>
<td>0.4</td>
<td>7.8</td>
</tr>
</tbody>
</table>

**Zambia case: up to 400% improvement in MT and English**

### Results in Grade 2 in English:

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>2002</td>
<td>24</td>
</tr>
</tbody>
</table>
• What are the conclusions one could draw from these?

• What do the cases seem to have in common?
Delivering on the pledge: institutional, instructional (1), assessment

1. Teaching effectiveness, scripted lessons, direct instruction, supervision
2. Devoted time (reduce absenteeism, claim specific reading time in week, etc.)
3. Materials (cheaper, plentiful, massive, pedagogically more sound)
4. Mother tongue (including materials): potential for speed up, less daunting than thought?
5. Useful (varied) assessment
But…

All these things need to be:
1. Detailed
2. Serious
3. Meticulously planned and assessed
4. Evidence-based
5. Not one single model, but whatever is done has to be evidence-based
Some reminders

• Reading is not a natural skill like talking; it is precious/unique, it has to be taught
• Skills and time devoted to reading have deteriorated or never been good. Teachers say: “we are simply not taught to teach reading.”
• Fluency (reading speed and correctness) matters and needs to be measured, but is not the main goal
Some reminders – 2

• In campaigns, do baseline, endline, but midline after 1, 2 years!
  • Otherwise dream things are going well, often they are not
Why fluency matters - 1

• the reason is simple:
  • If you tie up 100% of your brain in what you are doing, then you cannot understand what you are doing
  • Paradox: Long-term memory is essentially infinite, short-term memory very fragile
  • But stimuli have to pass through short-term memory, and be “chunked” before can be understood and get into long term memory
  • **Thus, readers must be automatic, fluent before they can really use reading to learn and to enjoy**
Why fluency matters - 2

• procedural knowledge/skills/fluency are NOT antithetical to conceptual knowledge

• e.g., you can only do serious (?) maths if you instantly (fluently) recognize and can read why

\[ a\sum x_i = \sum ax_i \] but on the other hand \[ a_i\sum x_i \neq \sum a_i x_i \]

• that, then, allows fluency to lead to conceptual insight (and vice-versa), and it takes drilling, not just “conceptual” knowledge
Lastly: what’s more important?

Getting the theory right or executing well?
Theory or implementation?  
Strategy or real action?

<table>
<thead>
<tr>
<th>Scenario 1:</th>
<th>Scenario 2:</th>
<th>Scenario 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: 100% correct</td>
<td>Theory: 80% correct</td>
<td>Theory: 30% correct</td>
</tr>
<tr>
<td>Implementation/action: 30%</td>
<td>Implementation/action: 80%</td>
<td>Implementation/action: 100%</td>
</tr>
<tr>
<td>Total: 30%</td>
<td>Total: 80% or maybe 64%</td>
<td>Total: 30%</td>
</tr>
</tbody>
</table>

A program is as strong as its weakest link, or the product of the two.
This is how most 3rd-grade kids in Africa will read.