Pilot research to large scale practice:
Kenya’s path to a national literacy program underpinned by evidence

Dr. Benjamin Piper
Senior Director, Africa Education
RTI International
1. Experimental research
2. Implementation research
3. Applying findings broadly
• Coach to teacher ratios? 15:1 is better
• Literacy and numeracy programs together? Yes
• Mother tongue programs effective in MT? Yes
• Mother tongue programs effective in other subjects? No
• Which program ingredients matter most?
  – Training and coaching !
  – New book at 1:1 ratio !!!
  – Teachers’ guides !!!!!
• Which ICT program can support learning?
  – E-readers for kids Yes $$$$$
  – Tablets for teachers Yes $$
  – Tablets for coaches Yes $
• Tusome included almost all of these elements
National Tusome Early Literacy Programme
Experimental Research: Books

1:1 books
Implementation research: National books distribution
Experimental Research: Teachers’ Guides

World Development article
(Piper et al, 2018)
Implementation Research: Teachers’ Guide Utilization

75% of teachers are teaching 75% of the lessons

- Total Lessons: 150
- 75th: 137
- 50th: 126
- 25th: 113
Experimental Research: Teacher Professional Development Designs

Skill-based teacher training
**Implementation Research: Teaching Targets**

<table>
<thead>
<tr>
<th></th>
<th>Benchmark levels (cwpm)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Emergent</strong></td>
<td><strong>Fluent</strong></td>
<td></td>
</tr>
<tr>
<td>Kiswahili</td>
<td>17</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>30</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

Piper et al, 2018

JEDU
Experimental Research: Coaching

Piper et al, 2015
TATE
## Implementation Research: National & Regional Data for Accountability

**Piper et al, 2017**  
IJEDICT

### CSO Report (2017 Sep)

#### Counties

<table>
<thead>
<tr>
<th>County</th>
<th>Number of classroom visits (Percentage of Target Visits)</th>
<th>English - Class 1 Correct per minute (Percentage at KNEC benchmark)</th>
<th>English - Class 2 Correct per minute (Percentage at KNEC benchmark)</th>
<th>English - Class 3 Correct per minute (Percentage at KNEC benchmark)</th>
<th>Kiswahili - Class 1 Correct per minute (Percentage at KNEC benchmark)</th>
<th>Kiswahili - Class 2 Correct per minute (Percentage at KNEC benchmark)</th>
<th>Kiswahili - Class 3 Correct per minute (Percentage at KNEC benchmark)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>21714 (88%)</td>
<td>25 (57%)</td>
<td>40 (44%)</td>
<td>70 (0%)</td>
<td>21 (69%)</td>
<td>26 (39%)</td>
<td>48 (0%)</td>
</tr>
<tr>
<td>Baringo</td>
<td>311 (46%)</td>
<td>24 (64%)</td>
<td>35 (27%)</td>
<td>72 (0%)</td>
<td>22 (72%)</td>
<td>25 (34%)</td>
<td>46 (0%)</td>
</tr>
<tr>
<td>Bomet</td>
<td>391 (63%)</td>
<td>17 (28%)</td>
<td>32 (24%)</td>
<td>61 (0%)</td>
<td>16 (59%)</td>
<td>20 (10%)</td>
<td>34 (0%)</td>
</tr>
<tr>
<td>Bungoma</td>
<td>412 (51%)</td>
<td>19 (45%)</td>
<td>40 (28%)</td>
<td>60 (0%)</td>
<td>17 (60%)</td>
<td>26 (39%)</td>
<td>43 (0%)</td>
</tr>
<tr>
<td>Busia</td>
<td>276 (62%)</td>
<td>16 (37%)</td>
<td>39 (42%)</td>
<td>56 (0%)</td>
<td>18 (63%)</td>
<td>24 (35%)</td>
<td>58 (0%)</td>
</tr>
<tr>
<td>Elgeyo Marakwet</td>
<td>293 (74%)</td>
<td>21 (48%)</td>
<td>41 (39%)</td>
<td>67 (0%)</td>
<td>12 (59%)</td>
<td>21 (25%)</td>
<td>45 (0%)</td>
</tr>
<tr>
<td>Embu</td>
<td>221 (57%)</td>
<td>18 (30%)</td>
<td>38 (31%)</td>
<td>61 (0%)</td>
<td>19 (67%)</td>
<td>20 (22%)</td>
<td>42 (0%)</td>
</tr>
<tr>
<td>Garissa</td>
<td>49 (23%)</td>
<td>16 (53%)</td>
<td>28 (29%)</td>
<td>50 (0%)</td>
<td>29 (88%)</td>
<td>28 (16%)</td>
<td>36 (0%)</td>
</tr>
<tr>
<td>Homa Bay</td>
<td>982 (110%)</td>
<td>23 (60%)</td>
<td>38 (43%)</td>
<td>74 (0%)</td>
<td>20 (78%)</td>
<td>25 (39%)</td>
<td>49 (0%)</td>
</tr>
</tbody>
</table>
Implementation Research: Using location data

KNEC benchmark is the percentage of those students that have met the KNEC benchmark for either Kiswahili or English, and for either class 1, class 2, or class 3 of all the students assessed for those subjects. The benchmarks for class 3 are yet to be defined.
Did Tusome Work?
External Evaluation by MSI
(Freudenberger & Davis, 2017)
Tusome Average Effect Sizes

- English: Grade 1 = 0.67, Grade 2 = 1.04
- Kiswahili: Grade 1 = 0.63, Grade 2 = 0.76
1.2 million children
Applying Research: Gov’t of Kenya Book Purchases
Applying Research: Multi-Country Teachers’ Guide study
Applying Research: TPD study

TPD Model
1. Lecture
2. Discussion
3. Modeling
4. Practice

Multi-country TPD study 2018
Applying Research: Coaching study

Multi-country Coaching study 2019
Reflections

1) Experimental 2) Implementation 3) Applying Research

- Your first attempt will be wrong
- Design for scale – Real world RCTs
- Research implementation at scale
- Develop best practices literature
- Learning @ Scale study (Applying)
  - Instruction ingredients
  - System ingredients
Thank you!
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Large Scale Programs – Gains in Oral Reading Fluency

Increase in Oral Reading Fluency

Baseline Year 1 Year 2 Year 3 Year 4

Jordan Malawi Nepal
Rwanda Uganda (average) Tanzania
Kenya - Kiswahili Kenya - English

Increase in Oral Reading Fluency