USAID’s Early Grade Reading and Early Grade Math Impact Evaluations: Lessons Learned

National Education Week
Reforming the Education Sector for Effective Service Delivery: Embracing Innovations

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This presentation looks at lessons learned with regards to teacher performance from USAID’s Early Grade Reading and Math Programs:

Program Designs
Understanding the Impact Evaluation
Impact and outcome results
Fidelity of implementation
Recommendations
PROGRAM DESIGNS

**Numeracy Pilot**

Revised syllabus with greater emphasis on conceptual understanding and mathematical reasoning

Teacher resource guide with weekly work schemes, games and activities, performance standards, and assessment tasks

Training of Math Coaches who facilitate INSET and weekly learning circles to help teachers put the resources into practice

Math Coaches and Head Teachers to provide regular classroom observation and coaching/feedback

**Early Grade Reading Program**

Use of Ghanaian language and focus on phonics versus “whole language” approach to literacy acquisition

Ghanaian language materials including scripted lesson plans, pupil workbooks, supplementary readers, and assessment tools

Teachers trained on use of new materials through training events and weekly school-based INSET meetings

Head Teachers, Curriculum Leads, and Circuit Supervisors regularly observe and coach teachers on instructional practices
EVALUATION QUESTIONS

**Impact / Goal Questions**

**Math**

After 1 year, to what extent does the Numeracy Pilot improve early grade mathematics performance for P1 and P2 learners, as measured by the Early Grade Mathematics Mathematics Assessment (EGMA) and select subtests of the Ghana Early Numeracy Assessment (GENA)?

**Reading**

After 2 years, to what extent does the Early Grade Reading Program improve P1 and P2 reading skills, as measured by the Early Grade Reading Assessment (EGRA)?
Randomized Controlled Trial (RCT)

Sampling frame: all schools in Shai Osudoku and New Juanbeng (121 total)

60 schools randomly assigned to numeracy pilot

61 schools randomly assigned to control
EVALUATION RESEARCH DESIGN

Quasi-Experiment Using Statistical Matching

Intervention

Comparison
PROGRAM IMPACT MATH

Pupil Mathematics Performance

EGRA: Procedural understanding of math

3.8% increase in P1 5.3% increase in P2

Small reduction in zero scores

GENA: Conceptual Understanding of math

17.3% increase in P1 18.9% increase in P2

Small reduction in zero scores
### PROGRAM IMPACT READING

<table>
<thead>
<tr>
<th>Pre-Reading</th>
<th>Initial Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letter Sounds</strong></td>
<td><strong>Non-Word Reading</strong></td>
</tr>
<tr>
<td>s y m o</td>
<td>kɛw rɔm mɛn</td>
</tr>
<tr>
<td>Ɛ y m N</td>
<td>nuw lim lɔm</td>
</tr>
<tr>
<td>u k ɔ a</td>
<td>ɡɔm lam mun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listening Comprehension</th>
<th>Oral Reading Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abasɛm tiawa bi ni. Mepɛ se wokenkan no dennennen, ne ntemntem ma me. Wokenkan wie a, mebisabisa nsem bi afa nea woakenkan no ho. Meka se “Fi Ase” a kenkan abasɛm no sênea wubetumi biara. Wudu asemfua bi so na wunnim a, kɔ asemfua fofo so.</td>
<td></td>
</tr>
</tbody>
</table>
The average gains are not representative of all students.

The most significant gains exist amongst the top 10% and top 25% of students.

The driver of the low averages are zero scorers.
The following observed changes to teacher performance show greater use of teaching approaches that promote a conceptual understanding of math:

- 29% more likely to ask students to find and share problem solving strategies
- 15% more likely to engage in mathematical communication
- 14% more likely to provide students opportunities to use mathematical reasoning
- 10-15% more likely to use active learning techniques in classroom
- Reduced frequency of assessment but greater response to assessment data
Most outcomes surrounding changes in pupil and teacher behaviour were positive.

- 7% increase in time spent on learning activities
- 28% increase in coaching and mentoring
- 20% increase in coaching based on observation
- Reduced frequency of assessment
- Improvement in implementation of 4 out of 5 teaching best practices
In terms of use, lesson plans and teacher guides were widely used, while classroom materials, even when present, were used inconsistently.

**Fully Implemented**
- Training of head teachers
- Training of math coaches
- Provision of Materials

**Partially implemented**
- Math coaches provided only 20% of planned INSET training
- Math coaches, head teachers, and circuit supervisors provided support at 30% dosage
- Supplementary materials not developed consistently
FIDELITY OF IMPLEMENTATION READING

About 80% of treatment schools in a state of “full” or “near full” implementation fidelity on multiple components.
### Predictors of Performance Math and Reading

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupil always hungry at the start of school</td>
<td>▼</td>
</tr>
<tr>
<td>Teacher punishes pupil for poor performance</td>
<td>▼</td>
</tr>
<tr>
<td>School is in rural locality</td>
<td>▼</td>
</tr>
<tr>
<td>Low language match</td>
<td>▼</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>High fidelity to program</td>
<td>▲</td>
</tr>
<tr>
<td>Enthusiasm for reading and math</td>
<td>▲</td>
</tr>
<tr>
<td>Female student</td>
<td>▲</td>
</tr>
<tr>
<td>Higher percent of reading teachers who are female</td>
<td>▲</td>
</tr>
</tbody>
</table>
The individual program component most significantly associated with program impact is lesson performance. The extent to which teachers follow the scripted lesson plans and engage their students in doing so...
Overall fidelity to the program was essential. The effect size of the program schools with low or partial fidelity were significantly lower than those with near full or full FOI.
RECOMMENDATIONS

- **Program lesson plans and teacher guides** are helpful to teachers and are associated with success.

- For full programmatic scale up, MOE and GES management should **integrate more accountability mechanisms** that ensure greater fidelity of implementation.

- Teacher training curriculum should **encourage teachers to give positive rather than negative reinforcement** to students.

- Research how to **overcome the gap** between the large **conceptual** gains and the smaller **procedural** gains we see on math performance.
Thank you