

## **Abstract Title Page**

**Title:** *Every Child Counts: Adapting and evaluating research results on remedial education across contexts*

**Authors and Affiliations:**

Annie Duflo, Innovations for Poverty Action  
Jessica Kiessel, Innovations for Poverty Action

## Abstract Body

### Background / Context:

While enrollment rates have dramatically increased in the last ten years, learning levels have not matched this progress. In Ghana, only 6.5 % of grade 3 students could read a simple grade 1 level text (2013). Many programmes have focused on the resource gap in primary schools in the developing world, yet several studies have shown that improving resources alone—such as providing textbooks, flipcharts, or additional teachers — may not actually improve learning for the majority of pupils, if they have not acquired the basic skills (Glewwe, Kremer, and Moulin 2002; Glewwe, Kremer, Moulin and Zitzewitz, 2004). Other reports on education quality have focused on the large proportion of untrained teachers and the necessity of providing them with formal training and of improving teachers' deployment.

Rigorous evidence from around the world has shown that significant improvements in learning can be obtained at comparatively low cost by spending more, focused time ensuring that the bottom half of the class in the early grades does not get left behind. Indeed, while pupil-teacher ratios (PTRs) in Ghana are low on average, they hide wide disparities, and many teachers have to deal with crowded classes and pupils with very different levels of learning. Because of these disparities, it is a challenge to target instruction at the right level for all pupils, particularly for weaker students. Ironically, this situation is to some extent related to recent improvements in enrolment rates: free education for all has successfully boosted the enrolment rates of students from poorer backgrounds who often have illiterate parents and no support at home. In the baseline survey of this study, for example, only 54 percent of pupils had a literate parent and 36 percent had no one at all to help with homework. (Innovations for Poverty Action, 2010).

A 2005 study in India demonstrated that minimally-trained volunteers delivering focused attention to the weakest pupils significantly improved learning outcomes for basic skills in reading and math (Banerjee, Cole, Duflo, and Linden 2005). The programme—known as the Balsakhi programme— increased test scores of all children in treatment schools by an average of 0.14 standard deviations in the first year, and 0.28 in the second year of treatment. This major difference was achieved at an extremely low cost relative to other educational programmes: around USD 2.25 per child per year. This is also quite low relative to the USD 78 per child per year that the government of India spends on public education, and is among the most cost-effective education interventions tested thus far in the developing world. (J-PAL. “Making Schools Work for Marginalized Children.” Policy Briefcase No. 2. 2006.) Given Ghana's similar educational context and urgent need for cost-effective, innovative interventions, the evidence from the Balsakhi programme suggested that a similar programme could provide a key answer to the gap in learning levels in Ghanaian primary school.

Education stakeholders often emphasize the need for additional teachers, focusing on over-enrolment and high pupil-teacher ratios as the critical problems in developing-world schools. However, research from studies such as the Balsakhi evaluation described above suggests that the key factor may be the emphasis on targeting instruction at the pupil's actual learning levels. A study in Kenya that provided extra teachers to classrooms in several treatment groups showed that simply reducing class size had no effect on pupil achievement, but when classes were tracked by ability level, students' test scores increased significantly. Pupils at all levels benefited significantly from the tracking programme, and the differences persisted a year after the programme had finished. (Duflo, Dupas, and Kremer, 2008) Given the similarities in educational context across Ghana and Kenya and the ready availability of extra (untrained)

teachers in Ghana through the Youth Employment Programme, the successes of the Kenya study indicated an opportunity to replicate and extend the results in a new context. The results of this study also suggested the possibility that tracking pupils by ability level could affect learning outcomes, even if class sizes were not reduced—an idea that could provide another path towards improved educational outcomes in the Ghanaian context.

**Purpose / Objective / Research Question / Focus of Study:**

The Teacher Community Assistant Initiative (TCAI) tests the provision of remedial education as one possible solution to low learning levels in school. The theory of change of this program is simple: primary schools across the developing world fail to equip pupils with basic literacy and numeracy skills, often because schools are not able to target teaching to the actual learning levels of pupils. Facing heterogeneous classrooms, teachers are under pressure to complete a curriculum that is not adapted to the majority of students (Beatty and Pritchett, 2012) and need to leave a large fraction of their students behind. To be able to focus instruction at the child’s level for all children, they either need support in the form of assistants focused on basic skills; or they need the opportunity, clear mandate and skills to do so.

The study aimed to adapt the interventions tested in India and Kenya described above in a way that it complied to the theory of change but was adapted to the Ghanaian context. The objective was to verify that this model would work in Ghana, when implemented as a government program, and to determine what intervention design would work best.

**Setting:**

While there has been a major push to increase enrolment at the primary level across the developing world, low educational outcomes have persisted in many countries. In Ghana for example, the 2009 National Education Assessment showed that only 20 percent of grade 3 pupils reach national proficiency levels in English, and 25 percent reach proficiency in maths (NEA 2009). A closer look at student learning levels collected during this study’s baseline in 2010 reveals an even more dismal picture. At the early primary level, very few students are learning the basic skills they require to succeed in school. In fact, only 50 percent of P1 pupils in Ghana can identify letters and single-digit numbers, while only 8 percent can read simple words. Without these foundational skills, pupils will fall farther and farther behind as they progress through school, with the gap between actual learning levels and proficiency standards growing each year). With more than 20 percent of Ghana’s national budget (Government of Ghana, Budget Statement and Economic Policy 2010) already allocated to education, there is clearly an urgent need for innovative and cost-effective solutions that can directly target the low learning levels of primary students, allowing them to build basic skills in order to catch up to proficiency standards. The evaluation of the TCAI Pilot was implemented in 500 government primary schools located in 42 districts in Ghana that were randomly selected so as to be nationally representative.

**Population / Participants / Subjects:**

The TCAI Pilot evaluation was implemented in grades 1, 2 and 3 of 500 primary schools (100 of which were control schools) in 42 districts representing all of the regions of Ghana. Approximately 40,000 number of students participated in the study. Out of these students, 25 students in grade 1, 2 and 3 from all 400 treatment schools were interviewed as part of the TCAI study in addition to the same number of students from the 100 control schools. Teachers,

Teacher Community Assistants (TCAs), and community members were also interviewed as well as part of the baseline survey.

### **Intervention / Program / Practice:**

The implementation of the TCAI program began in May 2011, as collaboration between Innovations for Poverty Action (IPA), National Youth Employment Program (NYEP), the Ghana National Association of Teachers (GNAT) and Ghana Education Services (GES). The program was based on research on the highly successful Pratham Balsakhi program in India, where a community volunteer teacher provided targeted instruction on basic skills to the lowest performing primary students, and also draws on lessons from successful education programs in Kenya. The TCAI Pilot includes four main programs that aim to target instruction to children's actual learning levels. 1.) a Teacher Community Assistant (TCAs), paid a small salary through the NYEP and trained in a simple teaching methodology focused on targeting basic literacy and numeracy instruction, provides remedial education to a group of lowest level learners pulled out during the school day. 2.) TCAs provide the same remedial education support to lowest level learners, but classes are held after school. 3.) TCAs provide homework help to a randomly selected pull-out group during the school day. 4.) Teachers are trained to group their classes by learning levels and tailor their instruction accordingly.

### **Research Design:**

The evaluation tests the relative impact and cost-effectiveness of each of the following factors:

- Does providing schools with teacher assistants (TCAs) focused on remedial instruction for the lowest half of the class improve learning levels?
- If so, is it due to the mere addition of an assistant, or to the focus on targeted instruction?
- Is it more effective during or after school hours?
- Can teachers trained in differentiated instruction produce the same results?

These questions were tested using a randomized design: 500 schools were randomly assigned to one of 4 treatment groups and a control group: (1) In-school remedial pull-out classes with a trained TCA, targeting the weakest pupils; (2) After-school remedial classes with a trained TCA, targeting the weakest pupils; (3) Class size reduction with an untrained TCA, splitting the class in half randomly; and (4) teacher training in differentiated instruction. Each program includes 100 government schools. Randomization was stratified by region, Pupil Teacher Ratio, and average school test baseline score.

### **Data Collection and Analysis:**

TCAI data collection included a baseline, 6 rolling midlines and 2 endline surveys. The baseline survey included survey questionnaires with the head teacher, classroom teachers, school management committees, parent teacher associations, community members, and pupils. Data was collected on school infrastructure and quality, enrolment, teacher qualifications and background, and pupils' socio-economic characteristics along with individually-administered oral tests were administered in English, maths, and the local language (determined by the official language chosen by the National Literacy Acceleration Programme). All testing tools were developed in collaboration with the Assessment Services Unit of the Curriculum Research and Development Division of GES. During the midline, TCAI used unannounced visits by surveyors to document the daily school activities at schools in the sample and collect intermediary

variables. The midline tools included survey questionnaires for head teachers, Intervention 4 classroom teachers, and TCAs. Observational surveys on teacher and TCA attendance, teaching methods and activities in all schools in the sample. Attendance and Remedial Session Attendance Data was collected for all pupils in the sample. The endline surveys include the oral assessment components of the baseline survey, and added one new testing component: a grade-wise written test, developed in collaboration with Ghana Education Services.

### **Findings / Results:**

Preliminary results from the first endline indicated that the interventions which focus on targeting instruction at the level of the child—in-school and after-school remedial classes, as well as teacher training —had significant positive effects on basic skills in reading and math after only 10 weeks of instruction. After-school remedial education with TCAs showed the strongest results in both subjects. Effects from this intervention ranged from 0.09 standard deviation improvements on overall test scores to 0.18 standard deviations improvements in basic literacy skills. Given that only 34 percent of pupils were assigned to remedial classes, the results suggest particularly strong effects for those participating in the remedial classes in Interventions 1 and 2.

Between the second and first endline, improvements were made to the TCAI programme with an increased emphasis on literacy, the creation of informal TCA mentoring systems and the refinement of the teacher treatment so that grade 1-3 children were grouped by ability instead of by grade for one hour a day. However, the program suffered due to the late payments of TCAs – which led to low attendance - and low compliance by teachers. Nevertheless, the second endline found small but overall significant effects for both remedial TCA interventions for all grades (0.08 standard deviations). These effects are mostly driven by effects on grade 3-4 students, who have been in the program for longer, and for which assignment rates to remedial classes were higher. For grade 3-4 students, effects were 0.15 standard deviation and 0.13 standard deviations for remedial education during and after school hours respectively. These effects on P3-4 are similar to other education interventions that were evaluated at scale and shown to have positive impacts. The other two interventions also had statistically significant effects. In addition, effects persist after a year if leaving the program: indeed for grade 4 students, the impacts only go down by 0.02 standard deviations.

These effects are despite significant implementation issues and regional variation, which vary by region and correspond to the quality of implementation, in particular the attendance of TCAs. In regions with the highest impact, the effect of remedial education can be as high as 0.47 standard deviation, while in a couple of regions it had no effect. These results indicate that relatively higher quality programming and increased TCA attendance can lead to impressive impacts.

### **Conclusions:**

Overall, these results indicate that adding an extra assistant helps but more so if done in a remedial approach. Also, both remedial during or after school remediation by TCAs are promising approaches and potential impacts can be quite high when implemented adequately. Especially given inconsistent implementation, the teacher intervention, even though less impactful, is promising as well. Therefore, results indicate that combining these approaches may lead to higher effects. Addressing implementation challenges, especially TCA time on task and enforcement of the teacher intervention, may increase effects.

## Appendices

### Appendix A. References

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